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GASTRIC AND DUODENAL SECRETION.*

Tabulated Comparison of Stimuli.

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Gastric analysis is receiving renewed interest. This is due to the fact that the data obtained therefrom has become more reliable and easier of interpretation.

A comparative study has been made of the gastric and duodenal acidities and secretions. Various stimuli were employed.

There have been 501 Ewald, 200 alcohol and 100 histamine tests on 478 miscellaneous patients. A duodenal drainage followed nearly all the alcohol and histamine gastric stimulations. The majority of subjects were ambulatory patients. A knowledge of their clinical condition was available and this knowledge was often helpful in a correct interpretation of the information derived from gastric analyses. Personal performance, time, skill, experience and familiarity with physiology are also needed. The range of acidity for classification should be more uniform. This is just one instance of the many possible variables in comparison and interpretation.[1] Many ideas have changed relating to the physiology, pharmacology and nerve control of the stomach.

Acidity was determined by the Toepfer method, titrating with tenth normal sodium hydroxide. Dimethylamidoazobenzol and phenolphthalein were used as indicators.

Ewald test breakfasts were fractionally extracted thirty minutes after ingestion and thereafter every fifteen minutes for an averaged length of time of ninety minutes. This test gave trouble more frequently than others.

Table No. 1 shows a classification according to the maximum free acid.

The acidity at sixty minutes after ingestion classified the cases differently from the final fractional study in one-third of the Ewald tests.[2] One case (S. B.)† illustrates how easily we may interpret erroneously. The Ewald test showed no free acid on the 40-50-60 and seventy-five minute extractions but at ninety minutes the free acid was 24 and total 40. It is noteworthy that the peaks of the highest acid curves obtained by the Ewald test were reached late (95 mins.) after ingestion, also their frequent association with upper respira-

†References are made to graphs.

TABLE NO. 1.—EWALD

501 TESTS

NORMAL 20—39%	180 =	36%
HYPERACID 40+%	158 =	32%
HYPOACID 1—19%	117 =	23%
ACHLORHYDRIA	46 =	9%

IN NORMAL GROUP % ACID SUSTAINED 60 MINS. OR MORE IN 24
IN HYPER. GROUP % ACID SUSTAINED 60 MINS. OR MORE IN 28
IN HYPER. GROUP % ACID APPROX 40% IN 20
IN HYPO. GROUP % ACID APPROX. 10% IN 17

HIGHEST ACIDITIES OBTAINED

FREE	TOTAL	TIME	INTUBATION	CASE	AGE	DIAGNOSIS
140	150	90	*10	F. J.	57	BRON. FIBROSIS DUOD. ULCER.
100	115	100	1	L. B. M.	49	ANTRUM, PLEURISY, HEMORRHOIDS.
90	115	100	1	J. C. P.	57	EMPHYSEMA, BRONCHIECTASIS.
90	100	105	4	L. C. L.	57	BRON. FIBROSIS, PTOSIS.
70	100	75	1	L. C. L.	57	
87	100	90	1	W. E. A.	38	SINUS, CHR. BRONCHITIS.
85	95	80	1	S. J. H.	41	ASTHMATIC BRONCHITIS.
80	100	95	1	E. D. E.	38	DUOD. ULCER.
80	105	90	1	C. S.	63	DIABETES.

*Read before the Medical Society of Virginia at Roanoke, October 6-8, 1931.

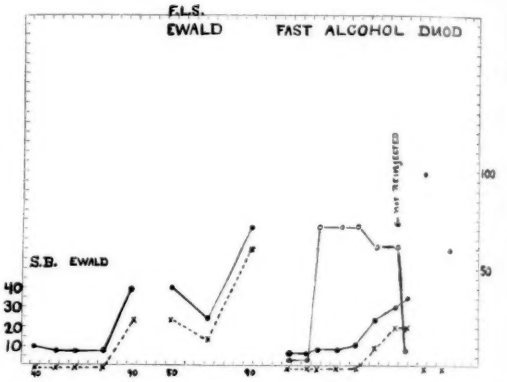
tory tract infections. These infections induce gastric dysfunction frequently. Perhaps at first there is an irritation with resulting hyperactivity of the peptic glands. Later they wear out, become atrophied, sclerosed or dammed up with the result that little or no acid is secreted.

Insertion of a tube into the stomach is thought to increase the production of alkaline gastric mucus, alkaline saliva and alkaline fluids regurgitated from the intestines. It also increases the gastric acid as shown in Table No. 10.

Table No. 2.—Highest Acidity in Fasting Stomach

Free	Total	Case	Age	Diagnosis
5 70 80	10 80 90	J. F. A.	40	Sinus, Bronchitis
55 60	60 70	G. F.	35	Aortitis, Adiposity, Fibroid
70 74 66	80 80 70	F. J.	56	Bronchial Fibrosis, Duod. Ulcer
0 20 50 80	5 50 60 82	"		
15 65 70	30 80 90	"		
65 80	78 90	K. B.	50	Duod. Ulcer, Appendicitis, Cholecystitis
45	65	E. I. J.	35	Splanchnoptosis

Alcohol was injected through the tube after withdrawal of the fasting gastric contents at ten minute intervals. High acids in the fasting stomach usually classify such cases as hyperacid.[3] The average extraction from the fasting stomach was 15.2 c.c. for ten minutes observed for an average length of time of twenty minutes. The usual amounts of 7 per cent alcohol injected were 50 to 80 c.c. More and stronger dilutions were used on occasions when it was known that the stomach emptied rapidly or had exhibited a weak response to a previously used stimulus. Little difference was noted. Withdrawals of the alcohol and reinjections after filtration were done at ten minute intervals, ten cubic centimeters being withheld each time for examination. The number of specimens obtained depended mainly upon the emptying time of the stomach. One case (F. L. S.) may be cited to show that many specimens may be required for correct interpretation. In this instance after 80 c.c. of alcohol had been injected, three specimens withdrawn at ten minute intervals showed no free acid and the succeeding withdrawals showed free 8, 15 and 15 and total acid 20, 25 and 30. The amounts withdrawn were 80, 80, 80, 60, 60



S. B.—No free HCl for 90 mins. after Ewald. Diag.—arteriosclerosis, arthritis.
F. L. S.—No free HCl 35 mins. after alc.; slow emptying; Ewald hyperacid. Usual duodenal high total and absent free acid. Diag.—diseased tonsils, otitis, eczema, constipation.

Key to Graphs
o = volume in c.c.
. = total acid.
x = free acid.
Horizontal—5 min. spaces.
Perpendicular—acidity.

and 5 c.c. This test was not continued long enough. The Ewald in this case had previously shown hyperacidity. Complete extraction was facilitated by withdrawal or further insertion of the tube and by the patient assuming different postures. This influence is shown in selected instances in Table No. 3. It apparently indicates a different degree of acidity in different portions of the stomach. Increase in the amounts withdrawn is usually noted after change of posture, which was from a sitting to a reclining one.

Regurgitation from the duodenum could be detected usually. Surprisingly little change in the acidity curve was caused by the presence of bile macroscopically.

After the patient turned on the right side and three or four ounces of warm sterile water were injected, the tube was fed gradually so as to allow the tip to enter the duodenum. This occurred in less than ten minutes in the majority of cases. After syphoning off the water, one or more specimens from the duodenum were obtained. Then ninety to two hun-

TABLE No. 3.—EFFECT OF CHANGE OF POSTURE

CASE	STIMULUS	FREE	T. A.	AMT.	TIME	POSTURE CHANGE AT ARROW
W. M. A.	F	5	15	20	0	
	"	15	20	30	10	
	"	0	8	10	15	
	Alc. 60	4	5	90	18	
		20	28	30	20	
		25	32	50	30	←
		32	40	30	40	
		30	38	30	50	
J. F. A.	F	18	22	30	0	
	Alc. 50	4	7	30	10	
		32	45	20	20	
		x	x	0	30	
		50	52(Bile)	110	45	←
				not		
				reinject	50	
		52	64 (Bile)	15		
J. B.	F	17	32	12	0	
	"	20	40	10	5	
	Alc. 50	5	7	50	7	
		35	40	45	17	
		40	45	30	27	
		55	65	35	37	←
		67	77	30	47	
		40	50	5	57	
K. B.	F	65	78	50	0	
	"	78	90	10	5	
	Alc. 60	12	18	60	7	
		50	55	50	17	
		54	58	110	27	←
		64	75	50	37	
		45	65	50	47	
		60	75	30	57	
L. J. E.	F	5	15	30	0	
	"	5	15	5	15	
	Alc. 60	5	7	70	20	
		20	30	30	30	
		22	30	15	40	←
		50	55	8	50	
M. F.	F	0	5	10	0	
	Alc. 60	0	5	5	10	
		0	2	30	12	
		0	4	12	20	
		0	4	100	30	←
		0	4	70	40	
		0	5	50	50	
L. A. S.	F	0	4	10	0	
	Alc. 60	0	2	35	10	
		0	4	5	20	
		7	10	25	30	←
		5	10	30	40	
		5	10	15	50	
		6	12	5	55	
W. H. W.	F	0	4	60	0	
	Alc. 60	2	7	50	10	
		2	4	50	12	
		0	4	50	20	
		0	6	30	30	
		12	15	30	45	←
		4	12	30	60	
		5	15	12	70	
		0	10	5	80	

TABLE No. 3.—EFFECT OF CHANGE OF POSTURE

CASE	STIMULUS	FREE	T. A.	AMT.	TIME	POSTURE CHANGE AT ARROW
J. L. F.	F	0	10	6	0	
	"	20	48	20	10	
	"	0	12	3	20	
	Alc. 50	3	5	30	30	
		15	20	12	40	
		34	36	80	50	←
		28	40	70	60	
		26	35	70	70	
		17	30	65	80	
C. L. L.	F	0	2	5	0	
		5	10	2	10	
	Alc. 60	5	10	60	15	
		35	38	70	25	
		52	55	50	35	
		65	70	70	45	
		75	85	110	55	←
		90	100	100	65	
		95	105	70	75	
		92	105	60	85	
				Not reinject	95	
		85	90	20		

dred cubic centimeters of warm 33 1/3 per cent magnesium sulphate solution were slowly injected. Often it was found expedient to change the position of the patient, to resort to gentle suction, or to abdominal massage. Coughing and deep breathing also seemed to expedite the flow. After nearly every duodenal stimulation, four being found frequently necessary, there was a titration for acidity made of an extraction after the bile had diminished or had ceased to flow. Biliary drainage is considered in this study mainly as it concerns acidity. If a duodenal drainage is contemplated on the same intubation with a gastric stimulation, alcohol is preferred as a stimulus. It is the test that is least objectionable.

Table No. 4 gives a classification of cases according to their acid value as determined by the alcohol test. There are three acid values given for each group. With the value used in Table No. 1 there is a decrease in the percentage of normal and hyperacid groups with a corresponding increase in the other two. The acid values for the alcohol test grouping comparable with those used for the Ewald test are hypoacid 1 to 14, normal 15 to 29, hyperacid 30+. Corresponding values for total acid are 11-24, 25-39 and 40+. As shown, the highest free and total acids are reached at practically the same time. In eighty-six cases (43 per cent) the acid curve was still ascending when the last titration was made.

TABLE NO. 4.—ALCOHOL TESTS

200 TESTS

NORMAL			
Free HCl	15—29%	45=22.5%	Total Acid (25—39%) 42=21%
"	20—39	57=28.5%	
"	30—49	50=25 %	
HYPERACID			
Free HCl	30+	83=41.5%	Total Acid (40+) 85=42.5%
"	40+	51=25.5%	
"	50+	31=15.5%	
HYPOACID			
Free HCl	1—14	36=18 %	Total Acid (11—24) 37=18.5%
"	1—19	56=28 %	
"	1—29	83=41.5%	
ACHLORHYDRIA		36=18 %	Total Acid (0—10) 36=18%

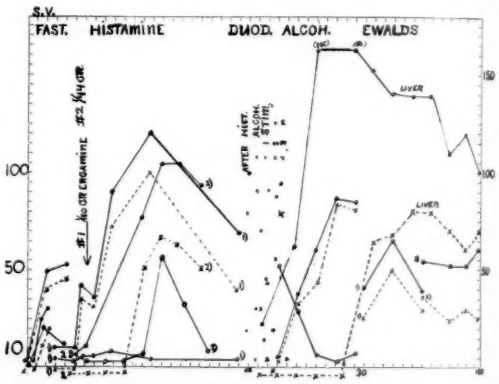
Highest acid reached in

Minutes	15	25	30	35	40	45	50	70	100
Free Acid	38	43	39	14	25	8	24	8	1
Total Acid	38	42	44	13	28	8	24	7	1

Histamine is the greatest stimulus to gastric acidity and secretion. It acts on the acid secreting glands.[4] Only those cases were given the histamine secretagogue that had previously received the Ewald and alcohol tests. All three tests were given the patients within various lengths of time, some within two days. The effect of histamine stimulations of a patient on successive intubations apparently agree more uniformly than is the case with other stimuli.

After fasting stomach contents had been obtained at intervals, a sphygmomanometer cuff was applied to the arm of the prone patient. The injection of histamine was given distally to the cuff, thereby enabling one to observe the blood pressure and control the degree, duration and time of occurrence of the reaction to a certain extent. The cutaneous reaction to histamine also can be used as a control for the dose. If a slight skin reaction occurred from a scratch with a 1 to 500 solution of histamine, the general reaction from the intramuscular injection was usually negligible and *vice versa*.[5]

Histamine was employed in solution (1 to 500), in ampoules (Imido) and in tablet form (Ergamine). Irrespective of the disposition, age, sex or size, ergamine acid phosphate gr. 1/44 was preferred. Ergamine was used in doses ranging from 1/11 to 1/150 of a grain. The gastric response and general effects varied with the dose but more so with the individual susceptibility. Acidity and secretion increased proportionately to the dose in most instances. Acidity responded quicker than secretion in all but one instance. Acidity increased with small



No response in secretion to 1/150 gr. ergamine with higher acid curve (1) than was obtained after 1/44 gr. Acid high in fasting stomach and after alc. and liver extract and in duodenum. Diag.—diabetes, bile tract trouble.

amounts of histamine that did not influence secretion (S. V.) There has not been seen a response in secretion without one in acidity.

Table No. 5 classifies 100 tests in which histamine in various doses had been given. Pa-

TABLE NO. 5.—HISTAMINE

100 TESTS

	ACID HIGHEST IN 10 MIN. INTERVALS		SECRETION	
Normal				
Total	90–124%	37	15–34 c. c.	30
Free	80–114%	38		
Hyperacid			35+ c. c.	39
	125+%	18	(70c. c. in 2 cases)	
	115+%	14	(120c. c. in 1 case)	
Hypoacid			6–14 c. c.	15
	10–89%	31		
	1–79%	29		
Achylia			0–5 c. c.	15
	0–9%	14		
	0	19		

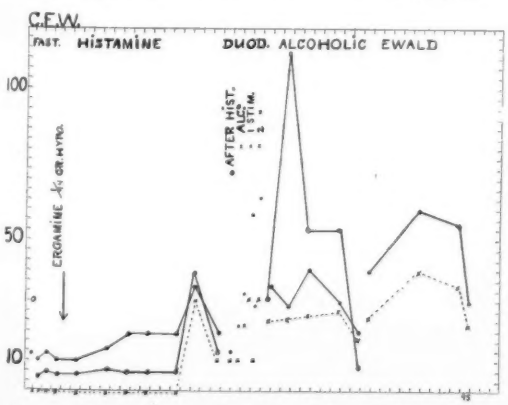
TABLE NO. 6.—ERGAMINE GR. 1/44

	64 TESTS			
	ACID HIGHEST IN 10 MIN. INTERVALS		SECRETION	
Normal			15–34 c. c.	18=28%
Total 90–124%	27=	42%		
Free 80–114%	26 =41%			
Hyperacid				
125+%	12=	19%	35+	28=44%
115+%	11 =17%			
Hypoacid				
10–89%	15=	23%	6–14	8=12%
1–79%	16 =25%			
Achylia				
0–9%	10=	16%	0–5	10=16%
0%	11 =17%			

tients with subacidity or achlorhydria were preferred and more sought for probably. This explains the high percentage of achylias. The range of acidity and secretion chosen for classification was arbitrary. Perhaps 35 c.c. is too low for ten minutes maximum secretion as 39 per cent fell into this class. Perhaps the range for the hypoacid group is too high.

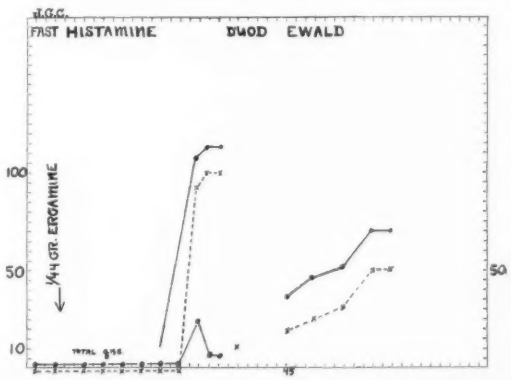
Table No. 6 classifies sixty-four tests in which was used ergamine acid phosphate gr. 1/44. It shows little difference from Table No. 5. There is an increased percentage in the normal at the expense of the hypoacid groups.

No alarming effects have occurred from histamine. It is well to have adrenalin or pituitrin in case of need. Although the effects are transient they may be very disagreeable. It is hoped and believed that this annoying feature will be eliminated. Tachycardia, flushed face, local flare and wheal usually occurred with a fall in blood pressure. These effects were sometimes barely noticeable even though a good gastric response occurred. Generally the gastric and systemic effects were proportionate in degree and duration. A gastric response to histamine always occurred when there had been one to bread or to alcohol. A response to bread but none to alcohol has been found more frequently than one to alcohol and none to bread. Allergic instability or its opposite may account for unexpected responses to stimuli.



No free HCl for 60 mins. after ergamine gr. 1/44. Duod. extractions all acid. Diag.—nasopharyngitis, bile tract trouble.

In one instance (C. E. W.) in which normal acid concentration existed with both the Ewald and alcohol tests, there was absence of free acid on each of six extractions, after ergamine gr. 1/44 had been given. On the seventh and eighth extractions the free acid was 30 and 10. There was no response in secretion until the seventh extraction. Another

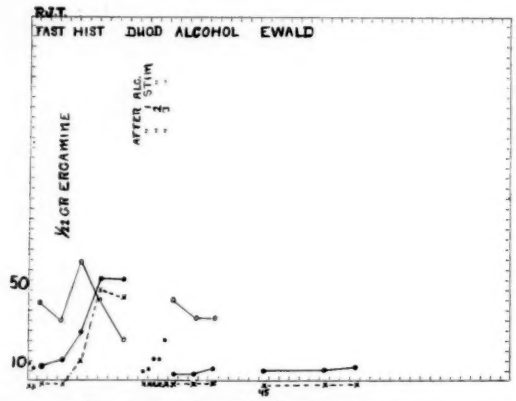


Similar to graph No. 3. Diag.—nasopharyngitis, bronchitis, constipation.

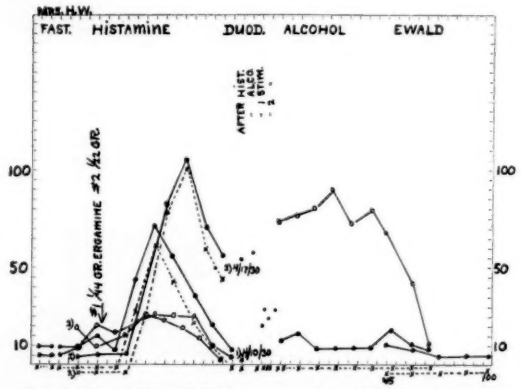
case (J. G. C.) showed no free acid after ergamine gr. 1/44 for six extractions, sixty minutes, and no increased secretion. On the seventh extraction of 24 c.c. the free acid was 90 and total 105.

In considering the variations in the effects of one stimulus from another or of the same stimulus in repeated tests on the same subject many factors are concerned. Uniformity in results distinguished repeated histamine tests on a single subject. This test should be done on all cases of achlorhydria and many of the subacid. It is believed that it possesses therapeutic, as well as diagnostic value. Acid and secretion are increased, mucus lessened, plugs and debris increased and then diminished. The theory that mucus exerts some plugging effect is plausible and washing it away seems practical. This cleansing is aided by the increase of secretion and contraction from histamine. With repeated histamine tests, evidence of in-

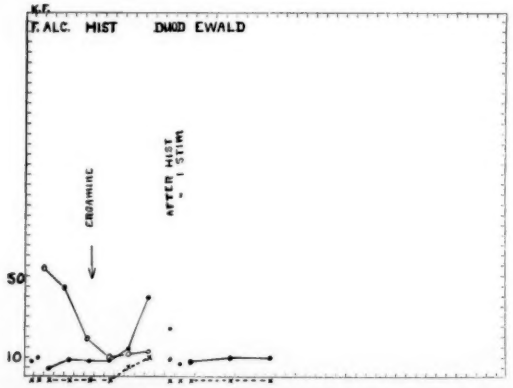
flammation diminish and acidity increases. In four cases (R. J. T., H. W., K. F., O. T.) histamine stimulated the secretion of free hydrochloric acid. They had failed to show free



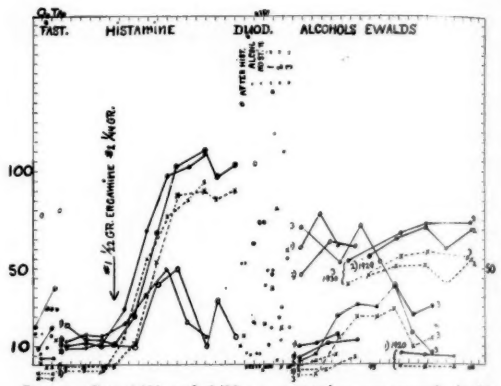
Graphs Nos. 5, 6, and 7 acid after histamine but none after other stimuli. Diag.—otitis, bronchitis, arteriosclerosis.



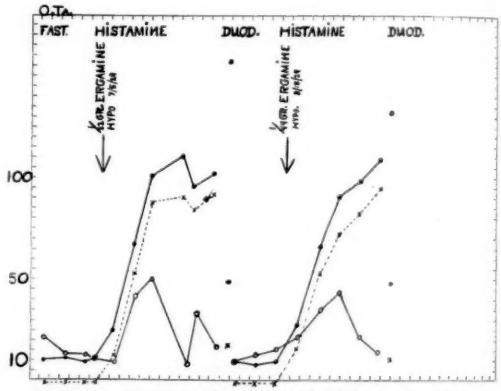
Curves after 1/44 and 1/22 gr. ergamine. Effect on secretion similar on acid proportionate to dose. Slow emptying on alc. Diag.—diseased tonsils, bronchial fibrosis, enteroptosis.



Alcohol and histamine on one intubation. Diag.—myocarditis, nephritis, hypoacid.

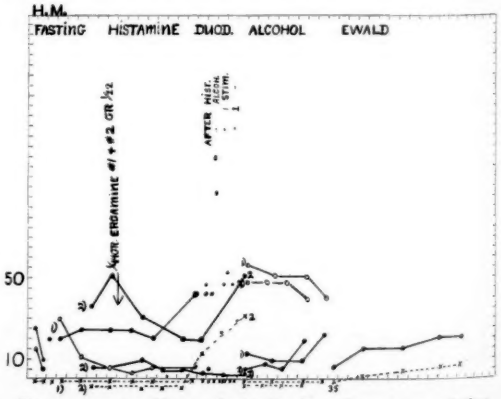


Curves after 1/44 and 1/22 gr. ergamine correspond closely. Shown also in graph No. 9. Large volumes in fasting stomach and duodenum. Ewald in 1920 showed absent free HCl—11/11/1929 and 1930 hyperacid and sustained. The histamine tests were 7/5/29 and 8/18/29. The alcohol tests were 9/2/28, 3/23/29 and 2/7/30. Diag.—oral sepsis, pleurisy.



Similarity of curves after 1/22 and 1/44 gr. ergamine.

acid previously with Ewald and alcohol tests. One case showed achlorhydria on one Ewald and very low acid on two alcohol tests, then normal acid on two histamine tests. After-

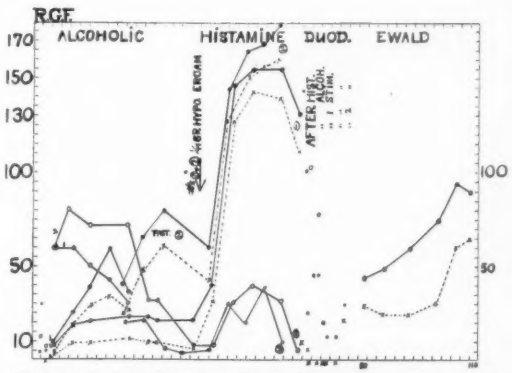


Slow response. Alc. weakest stimulus. Importance of time. Diag.—acne, chlorosis, hypoacidity.

wards one alcohol test was normal and two Ewald tests showed hyperacidity.

Both the histamine and alcohol tests inform as to the secretory ability of the stomach. Alcohol as used seemed to be a weaker stimulus than bread (H. M.) The Ewald test is least informative and least beneficial therapeutically and least applicable to histamine or duodenal stimulation on the same intubation.

Table No. 7 gives comparisons of the effects from different doses of histamine. Taking the average in 100 histamine tests, the highest free hydrochloric acid was reached in thirty-seven minutes and was 66 per cent. At this time the total acid was 80 per cent. The free and total acidities reached their highest



High acid after histamine. Local skin reaction very marked. Alcohol and histamine on same intubation. Slow emptying. Alcohol weakest stimulus. Fasting contents hyperacid. Diag.—diabetes, paresis, pansinusitis, bile tract trouble.

TABLE No. 7.—HISTAMINE

	ACID							SECRETION						
			Highest											
	Free	Total	Time obtd. in mins.					C.C. Total	10 Mins.		Time obtd. in mins.				Time Stud.
			0–19	20–39	40–59	60+	Aver.		Aver.	Most	0–19	20–39	40–59	60+	
All Doses															
100	66	80	7	31	48	14	37	79	15	28	14	51	27	8	59
**20	0	11	8	7	1	4	23	23	4	15	11	6	1	2	60
Ergamine Gr. 1/44															
63	72	92	5	19	31	8	42	73	13	32	7	33	18	5	58
*53	84	97	1	15	31	6	40	81	15	37	2	29	17	5	57
**10	0	8?	3	4	1	2	23	15	4	4	6	2	1	1	56
Ergamine Gr. 1/22															
20	59	75	2	6	9	3	39	76	12	27	4	12	2	2	59
*14	86	98	0	3	9	2	40	94	16	32	1	8	3	2	57
**6	0	11	2	3	0	1	20	23	3	9	5	1	0	0	53
Histamine m i i i (1 to 500)															
3	0	10	1	1	0	1	34	11	4	6	1	2	0	0	34
Imido ½ c. c.															
3	74	86	0	1	2	0	36	82	13	29	1	1	2	0	62

*Excluding Achylias.
**Only Achylias.
?Would be 6 if exclude one case with T. A. 42 which later showed free HCl after gr. 1/22 Ergamine (H. M.).

percentage usually synchronously. The average time of study was fifty-nine minutes and the average amount of secretion was 79 c.c. or for ten minute interval 15 c.c.[6] The highest acid titrated after histamine stimulation was free 160 and total 180 which was fifty minutes after the injection of ergamine gr. 1/44. Another test on the same subject and with the same dose gave free acid 144 and total 155 in thirty minutes. In this case (R. G. F.) the secretion averaged for ten minute intervals 22 and 25 c.c. in the first and second test respectively.

The greatest total amount of secretion obtained was 265 c.c. in sixty-five minutes (J. E. C.) The most secretion obtained in any ten minute interval was 120 c.c. and in the succeeding ten minutes 90 c.c. was extracted.[6] The most secretion occurred usually before the highest acidity. There is a more rapid influence upon secretion after the larger doses of histamine than upon acidity. The amount of secretion in achylia cases was always small. It was greatest in the early intervals, whereas, the highest acid came later.

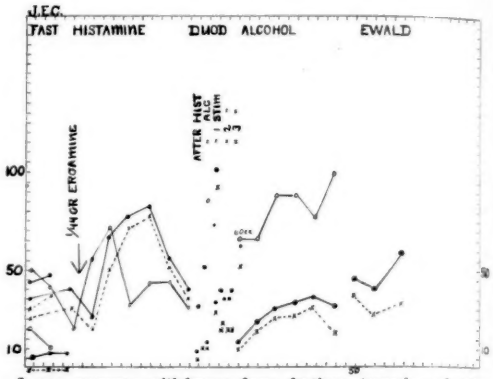
XUM

Increase in pulse rate and diminution in blood pressure after histamine injections are shown in Table No. 8. There are illustrative cases and a summary given. The diastolic pressure seems to be influenced more than the systolic.

Two or more Ewald tests were done on each of forty-two patients. Classified according to the free acid, there was disagreement in twenty (48 per cent) of these.

Two or more alcohol tests were done on each of thirty-six patients. There was disagreement in nine (25 per cent).

Two or more histamine tests were done on each of fourteen patients. There was no disagreement in these.



Large amounts withdrawn from fasting stomach and after histamine and alcohol. Duodenum always acid showing highest free and total. Diag.—diseased tonsils, sinusitis, bronchitis, enteroptosis.

TABLE No. 8.—PULSE AND BLOOD PRESSURE AFTER HISTAMINE
Illustrated Cases

Case	Dose	Before	After (mins.)							
			2	5	10	25	30	40	50	60
M. L.	1/150	Pulse 80	.....	86	.....	88	84	.....	.....	.....
		Systol 105	.....	105	.....	100	105	.....	.....	.....
		Diastol 70	.....	60	.....	60	65	.....	.....	.....
M. W.	1/88	Pulse 94	96	.....	96	.....	104	90	.....	.....
		Systol 158	145	.....	145	.....	165	145	.....	.....
		Diastol 90	70	.....	70	.....	85	65	.....	.....
R. L. M.	1/44	Pulse 90	92	.....	88	80	84	.....	.....	.....
		Systol 220	210	.....	200	190	210	.....	.....	.....
		Diastol 115	110	.....	105	115	118	.....	.....	.....
O. M. J.	1/44	Pulse 78	104	.....	110	90	.....	86	78	.....
		Systol 120	85	.....	80	100	.....	105	115	.....
		Diastol 80	75	.....	65	75	.....	100	80	.....
L. C. L.	1/44	Pulse 70	76	.....	82	68	.....	62	62	66
		Systol 122	90	.....	100	105	.....	100	100	100
		Diastol 75	65	.....	65	65	.....	65	65	70
J. E. B.	1/22	Pulse 96	94	.....	120	140	135	130	104	90
		Systol 115	120	.....	115	115	120	120	115	110
		Diastol 70	70	.....	65	65	55	55	65	70
H. V. W.	1/22	Pulse 96	98	.....	90	90	96	90	.....	88
		Systol 130	105	.....	95	105	105	105	.....	105
		Diastol 75	70	.....	60	65	75	75	.....	70
T. N.	1/22	Pulse 77	84	.....	90	80	64	68	66	66
		Systol 150	140	.....	110	110	120	135	135	135
		Diastol 80	70	.....	55	60	65	65	70	70
R. M. P.	½ CC. Imido	Pulse 62	60	78	62	60	58	.....	.....	.....
		Systol 120	105	105	105	120	118	.....	.....	.....
		Diastol 80	70	68	70	75	75	.....	.....	.....

Average all cases

	Pulse increase Per min.	Pressure fall Systol.	Diastol.
Ergamine grain 1/22	22	19	27
" " 1/44	15	17	14
" " 1/88	7	5	15
" " 1/150	5	0	0

TABLE No. 9

E 2 or more	42			HCl higher in E	101
A 2 or more	36			HCl higher in A	38
H 2 or more	14			HCl same	17
E & A	156	Disagree		Hyper in both	29
		20=48%		Hypo in both	26
		9=25%		Normal in both	22
		0		Absent in both	12
		70=45%		Hyper in E / Normal in A	28
				Normal in E / Hypo in A	23

	BILE							FREE HCl				
	F	D	F & D	D / F		F / D		F & D	F / D		D / F	
Present.....	156	259	99		170		45	171		112		80
Absent.....	422	279	236					203				

Highest *HCl in F		9
" " " D		2
" " " "	stim.	26
" " " "	c no "	5
" " " "	" 1 "	20
" " " "	" 2 "	6
" " " "	"Alc. "	15
" " " "	" E "	3
" " " "	" H "	3
" " " "	1st Int	12
" " " "	2nd "	6
" " " "	3rd "	3
" " " "	4th "	3
" " " "	6th "	1
" " " "	11th "	1
" " " " Subsequent to	1 E	2
" " " " "	" 1 A	4
" " " " "	" 1 E & 1 A	4
" " " " "	" 1 E & 1 A & 1 H	4
" " " " "	" 1 E & 2 A & 1 H	1
" " " " "	" 2 E & 2 A	1
" " " " "	" 3 E & 3 A & 1 H	1
" " " " "	" 2 E & 3 A & 1 H	1

E=Ewald; A=Alcohol; H=Histamine; F=Fasting stomach; D=Duodenum; S=Stomach; Stim.=Stimulation, Int.=intubation.
*Highest free acid titration in S. or D. after E. or A. or in F.

Both the Ewald and alcohol tests were done on each of 156 patients. Of these seventy-seven agreed and seventy (45 per cent) disagreed. In nine cases there was agreement at one time and disagreement at another. Free acid was higher with Ewald in 101, in the alcohol in thirty-eight, and about the same in seventeen. In both tests there was hyperacidity in twenty-nine, hypoacidity in twenty-six, normal in twenty-two, and absent acid in twelve. There was hyperacidity with the Ewald and normal acid with the alcohol test in twenty-eight cases. The acid was normal with the Ewald and subacid with the alcohol test in twenty-three cases. There were eight other combinations.

Bile was obtained macroscopically from the fasting stomach in 156 intubations and was not seen in 422.[7] It was present at one time and absent at another on the same subject in fifty-four instances. Bile was noted in duodenal extractions, no stimulus having been given, in 259 tests and was not seen in 279. There was no bile in fasting stomach and unstimulated duodenum in 236 instances, and present in both in ninety-nine instances. In 170 intubations there was bile in the unstimulated duodenum but none in the stomach. In forty-five tests bile was plainly visible in the gastric but not seen in the unstimulated duodenal extractions.

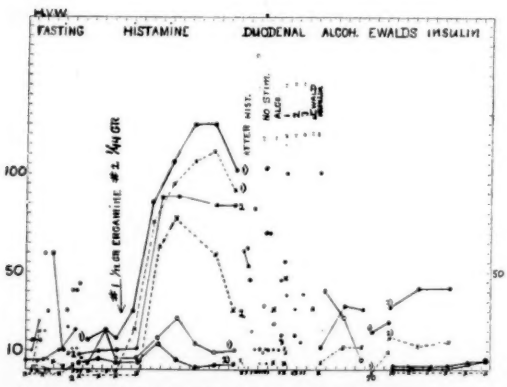
Free acid was absent in both the fasting stomach and unstimulated duodenum in 203, present in both in 171, present in stomach but absent in duodenum in 112, and absent in stomach but present in the duodenum in eighty instances.[8]

In nine cases their highest acidity was in the fasting stomach. The unstimulated duodenal acidity in two cases was higher than the gastric acidity after both the Ewald and alcohol tests.

After one or more duodenal stimulations with magnesium sulphate solution and after the cessation of the bile flow, extractions from the duodenum showed the highest acidity, excepting after the histamine stimulation, in twenty-six cases. Repeated intubations and stimulations may have influenced this. Five of the twenty-six received no gastric stimulation on the intubation that gave the highest acidity after one (twenty cases) or two (six cases) duodenal stimulations. Fifteen had an alcohol test on this same intubation, three an Ewald and three a histamine. The highest acid occurring in the stimulated duodenum was on the first intubation in twelve instances, on the second in six, on the third in three, on the fourth in three, on the sixth in one, and on the eleventh in one. It occurred on an intubation subsequent to one Ewald twice, one alcohol four times, one Ewald and one alcohol four times, one Ewald one alcohol and one histamine four times, one Ewald two alcohol and one histamine once, two Ewald and two alcohol once, three Ewald three alcohol and one histamine once, and two Ewald, three alcohol and one histamine once.

Four of the twenty-six cases, showing highest acidity in the duodenum, had received histamine. Two of the highest acidities occurred on the first duodenal intubation. Repeated intubations on many patients have failed to produce an increased acidity. They are believed to have a tendency to do so in some cases. This also applies to histamine injections. There has never been any indication of harmful effects objectively or subjectively.

This tendency to high acid in the duodenum on intubations subsequent to one or more in which histamine was used is illustrated by a case of diabetes (H. V. W.) The gastric acid was normal with histamine and the duodenal contents alkaline. One week later with no gastric stimulant and after bile ceased following magnesium sulphate instillation, the duodenal acidity was fifty-five free and sixty-five total. On several previous intubations the duodenal extractions had not been acid.



Hypoacid with alcohol and Ewald. Normal response in acid with histamine but poor in secretion. No free HCl after insulin units 20. Diag.—oral sepsis, diabetes, pyelocytitis.

The metal tip of the tube may act as a stimulus to acid secretion in certain fasting stomachs as exemplified in some of the graphs and in Table No. 10. This characterizes an exceptional type.

Repeated intubations are an influence in increasing gastric acidity. There is also a tendency to higher acidity on intubations subsequent to histamine tests. One case (M. W.

Table No. 10.—Increasing Acid in Fasting Stomach

Free	Total	Secretion (c.c.)	Time (mins.)	Case	Preceded by
0	10	30	0		
12	26	55	10		
26	37	50	20	T. T.	1 Ewald
35	48	50	35		
70	80	8	40		
15	26	38	0		
14	24	35	10	J. P. F.	1 Ewald
40	50	20	15		
50	54	10	20		
0	15	5	0		
0	15	2	10	F. J.	1 E & 1 Alc.
20	30	10	20		
15	30	2	0		
65	80	5	10	F. J.	1 E & 1 Alc. & 1 Hist.
70	90	5	25		
30	35	18	0		
20	30	12	10	S. J. H.	1 E., 1 A. & 2 intubations-all hyperacid
57	67	100	20		
70	77	14	25		
0	17	17	0		
0	14	7	10	J. W.	2 E. 1 A. & 8 intubations
8	22	13	20		
8	28	8	30		
0	5	5	0		
10	22	7	10	C. D.	.....
32	45	40	15		
0	5	2	0		
0	25	40	10		
5	25	20	20	L. J. L.	2 E., 1. A. & 2 H.
12	27	25	30		
0	10	5	35		
15	26	38	0		
14	24	35	10	J. P. F.	1 E.
40	50	20	15		
50	54	10	20		

TABLE No. 10.—INCREASING ACID IN FASTING STOMACH

FREE	TOTAL	SECRETION (c.c.)	TIME (mins.)	CASE	PRECEDED BY
0	5	2	0		
0	5	1	10		
0	5	2	20	H. L. S.	.....
40	45	10	25		
20	35	2	30		
22	42	2	45		
0	10	5	0		
25	30	5	10	C. L. L.	1 E. & 1 A.
50	55	30	15		
56	60	10	20		
0	10	6	0		
20	48	20	10	J. A. L.	1 E. & 1 A.
0	12	3	20		

W.) had no acid on two fractional Ewald tests and then showed normal acidity, four other intubations without any gastric stimulation having been received in the interim.

Tables Nos. 11 and 12[9] show that normal and increased gastric acidity usually occur between twenty and fifty years of age and achlorhydria between sixty to seventy.[10]

By the fractional Ewald test alone achlorhydria was found in 6 2/3 per cent, by both Ewald and alcohol in 6 1/3 per cent, and by all three tests in 11 1/3 per cent instances. The high rate in the last group was due to the fact that cases were frequently selected.

Figures in parentheses represent those which showed an abnormal increase in the number of leucocytes in the duodenal contents, graded one to four.

The greatest number of these microscopically abnormal cases (thirteen of twenty) occurred in the hyperacid group of decade forty to fifty, whereas the greatest percentage was in the decades seventy to eighty. The greatest percentage of such cases fell in the hypoacid and hyperacid groups.[11]

It is concluded that one test is insufficient to know fully the gastric secretory ability. The alcohol gastric test is preferred. It is best adapted to subsequent histamine stimulation and duodenal drainage on the same intubation. Gastric and duodenal secretions are very variable. Erroneous interpretations of our laboratory findings are easily made. A study of the duodenal and biliary tract contents should be made on the same intubation with the gastric test in the majority of gastro-duodeno-biliary derangements. This may be done with the

TABLE No. 11.—AGE INCIDENCE

DECADE	NO. CASES	ACIDITY				
		NORMAL	HYPER.	HYPO.	ACHLOR.	
10–20	22	5.....	5.....	4.....	0 (E) Ewald	
		0.....	5.....	0.....	0 (E&A) Ewald & Alc.	
		1.....	0.....	2.....	0 (EA&H) Ewald & Alc. Hist.	
–30	127	41.....	27.....	13.....	2 E	
		14 (5).....	11 (3).....	7 (3).....	0 E & A.	
		5 (2).....	4 (2).....	3 (2).....	0 E A & H	
–40	114	24.....	25.....	9 (1).....	3 E	
		18 (5).....	16 (4).....	6 (4).....	0 E & A	
		7 (5).....	6 (4).....	0.....	0 E A & H	
–50	92	14.....	12.....	11.....	2 E	
		2.....	20 (13-70%)..	7 (4).....	1 E & A	
		1 (1).....	14 (5).....	5 (1).....	3 (1) E A & H	
–60	75	10.....	6.....	11.....	3 E	
		10 (2).....	11 (5).....	5 (2).....	2 (1) E & A	
		5 (4).....	8 (4).....	0.....	4 (2) E A & H	
–70	44	4.....	7.....	0.....	7 E	
		4 (3).....	8 (4).....	2 (1).....	3 (1) E & A	
		1 (1).....	5 (3).....	2 (1).....	1 (1) E A & H	
						Total
–80	25	4.....	4.....	4.....	1 E	258
		0.....	4 (4).....	0.....	4 E & A	160
		0.....	0.....	1.....	3 (3) E & H	81
Total.....	499	170	198	92	39	

TABLE No. 12.—AGE INCIDENCE PER CENT (Approx.)

DECADE	CASES	ACIDITY			
		NORMAL	HYPER.	HYPO.	ACHLOR.
10–20	22	27%	46%	27%	0%
–30	127	48	33	18	1
–40	114	45	40	12	3
–50	91	22	48	23	7
–60	75	31	34	22	13
–70	44	20	45	10	25
–80	25	16	32	20	32

	Under 40 years	Over 60 years
Achlorhydria	2%	28%
Hypoacid	16	13
Normal	45	19
Hyperacid	37	40

TABLE No. 13.—INCREASE OF LEUCOCYTES IN DUODENUM

DECADE	No. CASES	WBC+++ or more	
		No. CASES	PER CENT
10–20	9	1	11
–30	47	17	36
–40	60	23	38
–50	56	25	45
–60	45	19	43
–70	27	15	55
–80	13	7	54
			41 Total Incidence
Normal Acid...	80	31	38
Hyper. Acid...	112	48	43
Hypo. Acid....	44	18	41
Absent Acid...	22	8	36

procedure as described, only one intubation being necessary. The relationship between the acid and alkali reactions in the stomach and duodenum is important.

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Professional Building.

THE MANAGEMENT OF INJURIES: SOME CAUTIONS.*

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In a former paper presented by me at these Clinics I have dealt with some of the principles of the management of patients that have suffered trauma, particularly those cases in which minor surgical and first-aid procedures will suffice. In this paper I shall call your attention to another group of patients,—those who have suffered injuries of such a character that hospitalization and major surgical procedures may be necessary. The procedures themselves will not be discussed because they do not come within the scope of this paper.

Not infrequently the general practitioner faces a difficult problem in deciding whether or not an injured person has a serious hurt. The initial shock may obscure important symptoms and signs or else the injury may seem so trivial that serious visceral or other injury may appear to be very unlikely. In some instances the decision may be rather difficult to make even after hospitalization and a period of observation of the patient.

In the short time available it will be possible to deal with only a few of the general principles involved and to discuss a few illustrative cases. To simplify the subject I shall consider injuries under a very general regional classification, as follows: 1. The extremities (exclusive of bones). 2. The cranium. 3. The spine. 4. The pelvis. 5. The chest. 6. The abdomen.

The Extremities. Certain injuries of the extremities are of such severity that the need of hospitalization for amputation or extensive repair is immediately obvious. Others seem so insignificant that little attention is paid to them and a simple dressing may be applied

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without examining the wound carefully. It is to this latter group that I would call your especial attention. It would be difficult to hazard even a guess as to the number of individuals that go through life with preventable deformities, particularly of the fingers, because of the failure to recognize severed tendons or nerves as the result of some apparently minor injury.

Every wound, no matter how trivial and unimportant it may seem, should be carefully cleansed and explored for retained foreign bodies and severed or injured tendons or nerves. Not infrequently the edges of wounds, especially those made by sharp objects, will adhere to each other quickly or be masked by clotted blood so that the depth of the wound will be misjudged and severed tendons and nerves may be overlooked easily. It is important, therefore, to employ the various active and passive motions and movements of the extremity to prove the continuity of tendons and motor nerves and to test the integrity of sensory paths by some such simple method as that of pricking the skin lightly with an ordinary pin.

If tendon or nerve injuries are present, usually the patient should be hospitalized so that a careful repair of the injured structures may be made under adequate anesthesia and with strict surgical technic. To delay in such cases means retraction of the severed ends, scarring and other conditions which may be difficult or impossible to rectify satisfactorily at a later time. In this group numerous illustrative cases might be cited but I shall not take the time.

The Cranium. Fortunately most cases suspected of or known to have cranial or intracranial injury are sent to a hospital at once. The first twenty-four hour period following such injuries is a crucial one and it is scarcely necessary to mention the importance of having such patients in a hospital where careful study with frequent observations of the pulse and the blood pressure and other indices of the intracranial pressure may be noted and where surgical intervention may be immediately available if necessary.

Mental disorientation, stupor or unconsciousness, a slow pulse rate, elevation of the blood pressure, occasionally a fall in the blood pres-

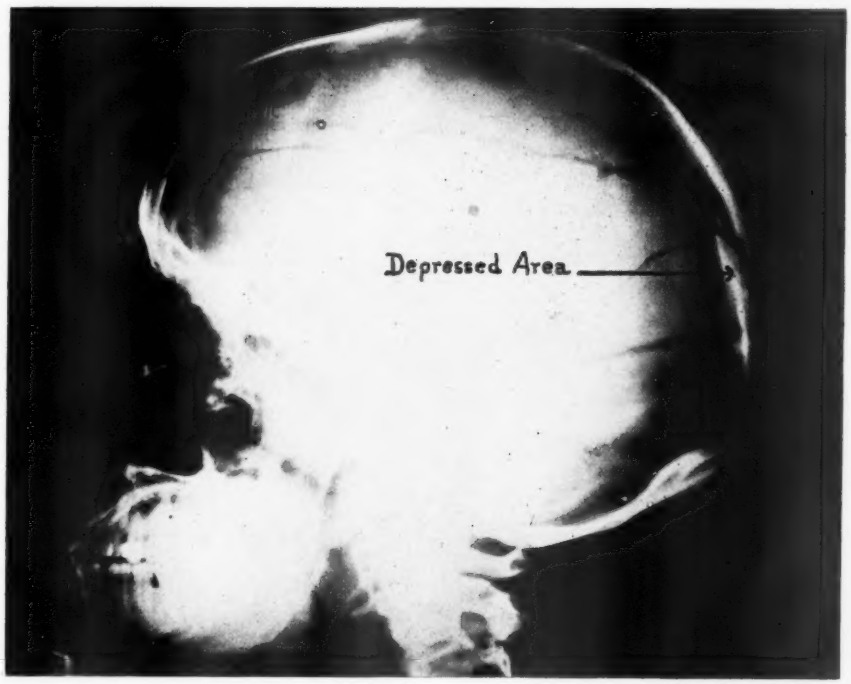

Fig. 1.—Roentgenogram of Skull (O. F. B.)

sure if shock is present to a marked degree, unequal pupils and unequal or otherwise abnormal reflexes are among the more common evidences of an increase in the intracranial pressure or of injury to the brain. Lumbar puncture furnishes valuable information but probably should be reserved for those patients in whom the symptoms and signs as enumerated above warrant hospitalization. Failure to hospitalize such patients promptly may entail serious consequences. The following case illustrates the point.

O. F. B., a white man, aged 42 years, was sent to the University of Virginia Hospital July 10, 1930, because of paralysis of the left side of the face and mental and temperamental changes. He had fallen from a wagon two months previously and struck his head. He had been unconscious for about three weeks after the accident. Examination revealed partial peripheral facial paralysis of the left side, right-sided hemianopsia, mental and emotional changes and urinary symptoms suggesting diabetes insipidus. Roentgenograms of the skull showed extensive old fractures with a depressed area in the occipital region (Figure 1).

This case is a typical instance of the late results of untreated fracture of the skull with depression of fragments. Many such cases have permanent paralyses, mental and temperamental changes and very frequently subsequent Jacksonian epileptiform seizures. The only way in which the incidence of such distressing sequelae can be reduced is by prompt hospitalization and appropriate treatment of depressed fractures and other serious cranial injuries.

The Spine. Injuries of the spine are often overlooked until the undue persistence of symptoms leads to thorough physical and roentgenographic examinations. Any person in whom a recent injury of the spine might have occurred should be handled and moved with the utmost caution in order to prevent compression or laceration of the spinal cord. Angulation or other deformity of the spine, the strength and equality of the reflexes, muscular strength and the normal sensitivity of the skin should be investigated. If there is any apparent abnormality, prompt and thorough roentgenographic studies should be made.

Especially the less extensive spinal injuries may be overlooked. At a recent clinic in Chicago, Chandler (Passavant Memorial Hospital—"Lumbo-sacral Abnormalities or Low Back Pain"—Fremont A. Chandler 4-2-30) presented several such cases. Often the injury had been an apparently trivial one. Persistence of pain in the lumbar or lumbo-sacral region simulating lumbago was the outstanding symptom. Roentgenograms revealed old fractures or dislocations of the lower vertebrae. Fusion operations were performed and usually were followed by very satisfactory results.

The Pelvis. Injuries to the pelvis may be easily missed, unless roentgenologic studies are made. F. S., an unmarried, white girl, aged 18 years, was brought to the hospital September 10, 1930, immediately following an automobile accident. She had suffered multiple bruises and minor lacerations. The most painful regions were the left hip, the left jaw and the right shoulder. No physical evidence of bony or other serious injury anywhere could be elicited. After the patient had recovered from the initial shock, roentgenograms were made and it was with some surprise that a fracture of the pelvis was found (Fig. 2). At no time was there any pain at the site of fracture.

Rest in bed was prescribed and the patient made an uneventful convalescence. Failure to recognize the condition might have been followed by serious consequences. The danger of encroachment upon the birth canal in young girls is obvious.

The more extensive fractures of the pelvis may cause damage to the bladder, urethra, rectum or sacral nerves by fragments of the bone. If the patient cannot void, a catheter should be passed. The passage of blood in the urine or by rectum usually indicates serious damage. Extravasation of urine into the tisues sometimes occurs and should be watched for carefully. Motor or sensory changes in the extremities may indicate pressure on or injury of the sacral nerves.

The Chest. A blow or crushing force applied to the chest may be followed by internal injuries, the extent of which is out of proportion to the external evidence of injury. One must be most cautious, therefore, to avoid the failure to recognize injuries of the heart and lungs when not even a fracture of the ribs may be apparent. N. J., an unmarried, colored girl, aged 21 years, was brought to the hospital September 2, 1928, immediately following an

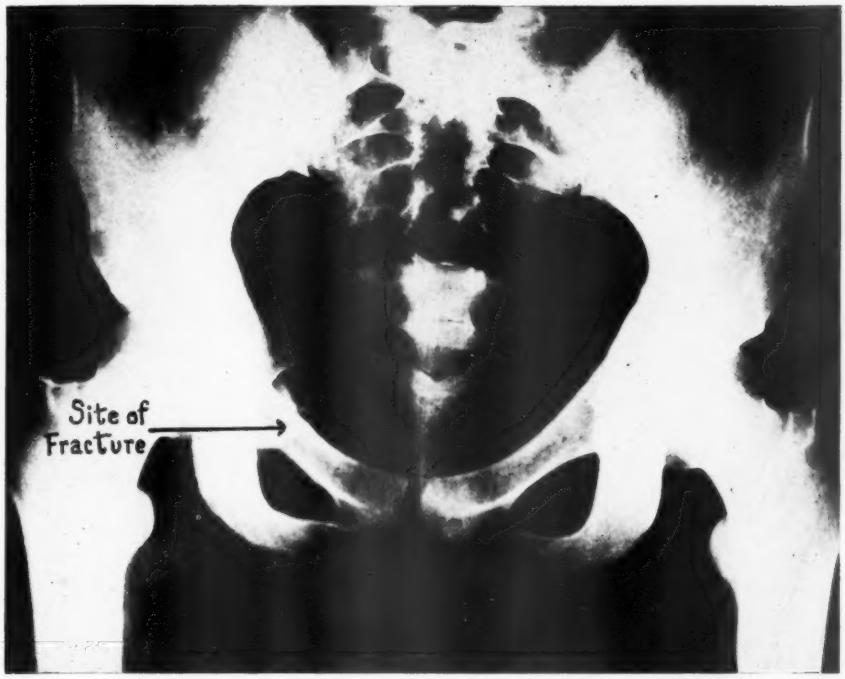

Fig. 2.—Roentgenogram of Pelvis (F. S.)

automobile accident. She was somewhat dazed and restless and complained of pain in the epigastrium and over the lower part of the sternum. There were no cuts or abrasions and no other evidences of external violence. The temperature was 99.8°, the pulse rate 110 and the respirations 52 per minute. No gross evidence of any serious injury was elicited.

The patient's condition showed little change for several hours and it seemed that no cause for alarm existed. Less than ten hours after admission, however, the patient died suddenly. Post-mortem examination revealed an incomplete rupture of the heart (Fig. 3). The case is of particular interest because of the extensive internal injury without external evidence of any serious injury.

Cyanosis, the spitting of blood, respiratory difficulty and changes in the breath or heart sounds are signs, any one of which warrants immediate hospitalization and further investigation of the patient. Failure to heed them may be followed by serious immediate or late consequences.

Abdomen. One of the most difficult decisions which the practitioner may have to make is that regarding the seriousness of an abdominal injury. Unfortunately serious visceral damage may be caused by relatively insignificant trauma and, to further complicate matters, symptoms and signs of the injury may be greatly delayed in making their appearance. Many hours and sometimes even days may elapse before such cases come to the hospital.

In a recent paper Goodwin reviewed some cases of "Subcutaneous Injuries of Intra-Abdominal Organs by Blunt Force" at the University of Virginia Hospital. There were twenty-one cases of injury of the gastro-intestinal tract, six of the liver and three of the spleen. The type of trauma varied greatly. Some individuals had been hit in the abdomen with the fist, others kicked by horses or mules, some had merely fallen down, others had fallen from horses or wagons and several had been in automobile accidents. The time elapsing between the injury and admission to the hospital varied from a few minutes to as much as eight days. The mortality increased directly as the duration of the injury prior to hospitalization and operation increased. Goodwin concluded that "when there is any *suspicion* about a rupture of the intestine, liver or spleen the safest course is to explore." An

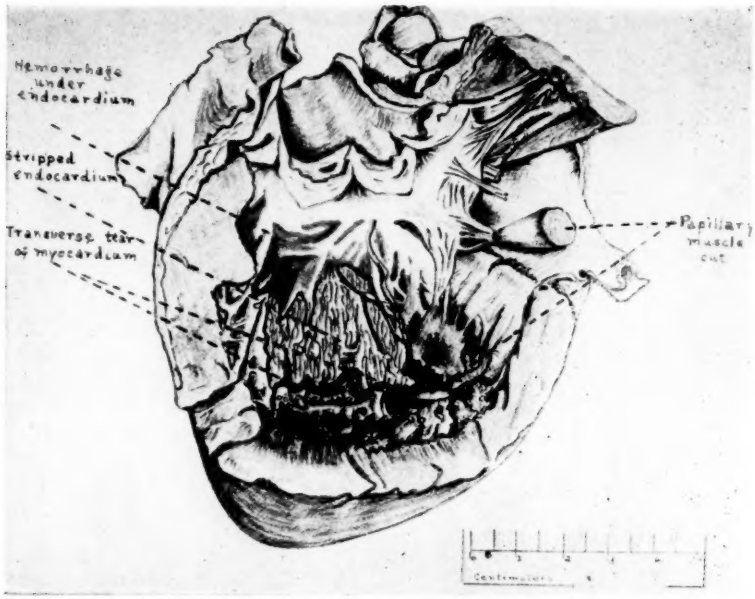

Fig. 3.—Ruptured Heart (N. J.)

occasional abdomen may be opened unnecessarily, but only in this way will the appalling mortality of these injuries be materially reduced. Abdominal tenderness, muscle spasm or rigidity and distention of the abdomen are all important danger signals.

I. H., an unmarried, white girl, aged 22 years, was brought to the hospital June 8, 1930, immediately following an automobile accident. There were extensive lacerations of the scalp and face and multiple bruises. The edges of the lacerations were excised and repaired in the usual manner. There was no evidence of intra-abdominal injury. The patient's temperature was 99.4° and the pulse rate 110 per minute. The following day she complained of abdominal pain and there was some rigidity of the abdominal muscles. The pulse rate was 138 and the temperature 101°. It was felt that an intra-abdominal injury, probably a rupture of the liver, was present and exploration was advised.

Under spinal anesthesia the abdomen was opened and a rupture of the liver with moderate hemorrhage was discovered. The tear was repaired and a blood transfusion given at once.

In this case the initial shock entirely masked the symptoms and signs of intra-abdominal injury, and it was not until twenty-four hours later that the symptoms appeared. Even at that time they were not conclusive and there was some difference of opinion among consultants who examined the patient.

W. J., a white boy, aged 18 years, was brought to the hospital September 15, 1929, immediately after having fallen from the running board of a moving automobile. He said that he had landed on his head as he struck the ground. Examination revealed some stupor, partly alcoholic (?), and generalized tenderness and rigidity of the abdomen. The temperature was 99°, the pulse rate 80, the systolic blood pressure 115, and the leucocytes numbered 23,000. Roentgenograms of the skull showed no fracture. Intra-abdominal injury was suspected and immediate exploration advised.

Operation revealed an extensive rupture of the spleen which necessitated splenectomy. There had been much loss of blood which was treated by intravenous infusions of saline solution and blood transfusion. The patient made an uneventful recovery.

Had operation been delayed it would have meant almost certainly the death of the patient, for, at the time of operation, the hemorrhage was arterial in origin and quite active.

J. E. U., a white boy, aged 8 years, was brought to the hospital fifteen hours after having tripped and fallen across a log, striking in

the upper abdominal region. Very little had been thought of the accident until three hours later when the child began to complain of pain in the epigastrium. Nausea and vomiting soon ensued but the family physician was not called until twelve hours after the accident. At the time of admission the general condition of the patient seemed good. The temperature, however, was 101°, the leucocytes numbered 22,000, and the pulse rate was 120 per minute. There was some abdominal distention with generalized rigidity. Immediate exploration of the abdomen was advised.

At operation a rupture of the third portion of the duodenum was discovered. The rent was about one and one-half inches long. It was repaired and the child made a satisfactory convalescence and recovery.

This case is of particular interest because of the relatively extensive visceral injury following a seemingly trivial accident. In spite of several hours delay the patient had the good fortune to recover.

Rupture of a kidney rightfully belongs to to the field of urology, yet many of these cases will be seen by the general surgeon. It is often impossible to decide definitely the exact nature of an intra-abdominal injury.

T. B., a colored boy, aged 11 years, was brought to the hospital March 1, 1930, three days after having been thrown from a horse against a pile of wood. There had been little or no complaint until the third day, at which time the abdomen had become distended and vomiting had occurred. Castor oil had been given but the bowels had not moved. Examination revealed distention and rigidity of the abdomen with elevation of the patient's temperature and leucocytes. There was some blood in the urine. Injury to the left kidney with possible intestinal injury was suspected and exploration advised.

Operation disclosed rupture of the left kidney with the extravasation of large quantities of blood in the mesocolon, the mesentery, and thence into the walls of the colon and stomach. The kidney was removed (Fig. 4) and an enterostomy tube placed in the small intestine because there seemed to be marked paralytic ileus. Convalescence was somewhat stormy but recovery eventually occurred.

In a necessarily very incomplete manner I have attempted to call your attention to some of our problems in the management of patients that have been injured. The most difficult problem is obviously that of diagnosis. In conclusion, may I not make the plea that all cases of trauma be considered serious until proven otherwise, and, furthermore, that all cases in which there is a suspicion of serious injury be hospitalized at the earliest possible moment.

Fig. 4.—Ruptured Kidney (T. B.)

ACUTE APPENDICITIS.*

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One of the most serious problems in the whole field of emergency surgery today is acute appendicitis. The disease is very common, and very deadly. It is responsible each year for the death of thousands of individuals, most of them in the prime of life, but sparing neither age, sex, nor social condition. Among these deaths are numbered, with disturbing frequency, individuals of a good deal of public prominence—favorite actors, bank presidents, members of the cabinet. Such people are surrounded by the best of medical attention; and this gives emphasis to the danger of the disease even under the best conditions, let alone the every-day conditions of general practice.

Yet death from appendicitis should be rather a rarity, instead of being, as it now is, a commonplace; for, when a death occurs from this disease, it means that somewhere along

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the line from patient to surgeon, and including both of them, something has gone wrong. The disease is almost never fatal if the offending organ is promptly removed. Appendicitis is, in the main, no doubt, diagnosed and treated well; but there is no question that the present death-rate is too high, and that, therefore, there are too many cases that do not receive adequate treatment early enough to save life.

A large number of deaths from appendicitis should be considered a reflection upon the efficiency of our methods of handling it, almost in the same way that a large number of deaths from typhoid or small-pox would be regarded; for the disease, while not preventable, is the most readily curable of any of our serious afflictions. Nothing is more gratifying and more certain than the patient's recovery from acute appendicitis, if it is treated promptly and early by operation.

Moreover, if death occurs, it is not ordinarily due to any special difficulty about the operation itself; it results simply from delay in performing it. It is, of course, peritonitis that kills; but we should not commonly be operating upon appendicitis in the stage of peritonitis; we should operate before perforation takes place.

This fact, that delay in operation is the major factor in the present death-rate, is quite generally known, as shown by current literature; but the reasons for such delay have not been so clearly analyzed. It may be that the patient himself is responsible, either failing to call his physician promptly, meantime taking a purgative, or declining to permit operation even when its vital necessity is clearly explained to him. If this is frequently the case, the only remedy is more thorough public education upon the subject, and, in passing, it is my own belief that such things should be briefly, but emphatically, taught in the public schools.

But let us suppose that the patient has called his doctor early in the illness, is willing to undergo operation if necessary, and there is a hospital within reach. Under these happy circumstances, is the problem of diagnosis always clear-cut to the physician, so that his duty lies plainly before him? Unfortunately, it often does not.

The attack may appear to be very mild, though it is known to be appendicitis; so that the physician is led to hope that it may subside without the necessity of emergency operation. Contributing to this thought may be the knowledge that the patient has passed through other similar attacks without much trouble, so that it may not seem appropriate to insist flatly on surgery.

And, finally, the disease may be obscure and difficult to recognize in its early stage. Right here I believe is a very important cause for the present trouble. The truth is that the symptoms are often very misleading, and the disease may treacherously conceal itself under the guise of something quite different.

Surgeons can rather easily lay some of the blame for delay, in their own private opinion, upon the family physician; for by the time the surgeon sees the case, it is usually easy enough to tell what is wrong, or at least that something serious is wrong; and he wonders why he was not called before. I wish at this point to say a word in defence of the general practitioner, for I am quite certain that if surgeons saw the patient as early as the family doctor sees him, they too would be misled, time and again, as to the diagnosis. I say this because for some years I was the surgeon of an industrial community, and my associates had instructions to let me see all abdominal cases early; so that I was personally responsible for any delay that occurred before operation. The difficulties of early diagnosis in some cases were in this way forcibly impressed upon me.

Following up the impression that I was not always finding easy sailing in my own diagnosis of acute appendicitis, I subjected to analysis 200 of my own personal operative cases, with especial reference to the problem. In ten cases, my notes were insufficient; in twenty-five cases, operation was done in the chronic or subacute stage; leaving 165 cases operated on for acute appendicitis, in which my personal notes were adequate.

Of this number, then, forty-six showed the appendix adherent or a little injected, but with no dangerous degree of inflammation; 119 showed severe inflammation; and of these, seventy-eight were gangrenous, perforated, or were complicated by some degree of peritonitis —that is to say, about half of the number diagnosed as acute.

Let me confine myself to the group of 119 cases of severe acute appendicitis, those simply adherent, or showing only a little injection, being eliminated from the discussion.

Difficulties in Diagnosis

In the first place, I found that the majority of cases of acute appendicitis were quite easy to diagnose, and indeed the patient often made his own diagnosis correctly. You are all perfectly well acquainted with the clinical picture, and I shall not go into it here.

I found that fifteen of this group, however, that is to say 12 per cent, had given me distinct trouble in diagnosis. Six of them were clearly enough appendicitis, but they seemed to be of a mild grade only, or clearly subsiding; whereas, at operation, gangrene or perforation was found.

The other nine were sufficiently confusing to delay my diagnosis for many hours, although I saw them repeatedly. In one case I was able to diagnose intestinal obstruction, and this proved to be due to an appendiceal abscess; in two others I could only perform exploratory laparotomy, the signs never becoming demonstrably localized. Two of the nine had suffered previous attacks of appendicitis; and in both cases the present attack bore no resemblance whatever to the others. Six of these nine were gangrenous.

Case I: Miss A., aged 17. Stomach-ache, beginning forty-eight hours ago, settled in the right lower abdomen, with vomiting at first. Had had previous similar attacks since childhood, usually lasting a day or two, sometimes a week. Examination showed considerable tenderness over the appendix, with perhaps slight spasm. However, her bowls had moved, nausea had disappeared, she had taken some liquid food with appetite, the eyes were bright, and she presented no appearance of illness.

Here there arose a very pertinent question, whether it would not be wiser to await the interval, since the process appeared to be subsiding. She was advised, however, that though all her previous attacks had gotten well, and this one seemed to be subsiding, yet safety lay in operation, and there was danger in delay, even to permit interval operation; for it was impossible to tell the condition of the appendix without seeing it, and it might well be about to rupture. Fortunately, the family made no objection, or I might have been persuaded to let her alone for a few hours observation. Immediate operation showed a completely gangrenous appendix. Here, therefore, improvement in symptoms coincided with gangrene; and the fact of previous similar recovered attacks did not mean a thing.

Case II: Mr. P., age 26. Abdominal pain for twenty-four hours, settling two hours ago in the right lower abdomen, with vomiting. One previous attack. Examination showed the abdomen not quite relaxed, and a little tender over the appendix, but this was certainly not pronounced. Temperature 97.4, pulse 76; patient did not look at all ill. Inflammation thought to be slight, but operation advised on general principles. Appendix found gangrenous for half an inch at the end.

Case III: Mr. H., age 39. History of attacks of "appendicitis" for eighteen months, with severe pain, lasting twenty-four hours, but not confined to bed; no vomiting. In the present illness, abdominal pain for forty-eight hours, gradually getting worse; mostly epigastric. No vomiting, bowels have moved. Seen by me twelve hours ago, and I found tenderness more especially to the upper left, and in the middle of the epigastrium. Stated that he had never had pain like this before; it bore no resemblance to his attacks of "appendicitis." It was impossible to lead him to admit increase of soreness near the appendix.

Twelve hours after admission, he felt better, but pain was beginning to localize, if anything, in the right side of the abdomen. Temperature normal, pulse 90. Six hours later, temperature 101, and to leading questions he admitted that there was maybe a little more tenderness over the appendix region than elsewhere. Operation showed the appendix deeply adherent in the pelvis, and wholly gangrenous.

I now think it is possible that I might have submitted this case to exploratory laparotomy on admission, in the present state of my knowledge; it occurred eight years ago, when I had not attained my present definite convictions on the subject; and, of course, hindsight is always better than fore-sight.

Case IV: Mr. H., aged 22. Abdominal pain for twenty-four hours, with nausea but no vomiting. Some tenderness of the lower abdomen, about symmetrical; Rovsing's sign referred either way; no spasm. Observation overnight; did not rest well, but no further nausea. Temperature 101. Some tenderness over left lower abdomen, none over the right. An hour later, some tenderness on both sides, about equal, and also in the upper abdomen. A little stiffening of the muscles on palpation, apparently mostly voluntary.

Enema given, good-sized bowel movement; but thereafter, marked increase in tenderness

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over the abdomen. Immediate operation, appendicitis thought most likely as being the most frequent emergency condition. Appendiceal abscess was found, with beginning general peritonitis. In this case, again, I suppose that my present knowledge would have led me to operate earlier, in spite of lack of earlier localization—"hind-sight," again.

Comment: It appears, therefore, that severe appendicitis can be present when signs of localization are lacking, or when there appears to be only a mild or subsiding attack, or when the symptoms bear no resemblance to previous attacks in the same patient.

Analysis of Symptoms

Further analysis showed then that pain was absent, mild, improving, or unlocalized in twenty cases of a severe grade of appendicitis; that tenderness was mild or unlocalized in nine cases; that vomiting did not occur in twenty-nine cases, in twelve of which there was not even nausea; that spasm was not present in twenty-two cases, and that Rovsing's sign of pain over the appendix, upon pressure over the opposite side, was present in less than half the cases in which the point was noted.

Nevertheless, the detection of spasm or the Rovsing sign was of decided help when present, and in a few cases definitely helped to determine the necessity of operation. The same is true for the other collateral signs.

Carrying the analysis further, thirty-eight of the severe cases had no fever (nineteen being gangrenous), and twenty-seven of them had no rise in pulse (fifteen being gangrenous). It is none the less true that a considerable fever, 102 or 103, or a decidedly elevated pulse-rate, 120 or so, nearly always means a severe grade of inflammation, occurring in seventeen and twenty-six cases, respectively, only three such cases showing no inflammation. The same thing is true of a leukocyte count of 20,000 or above, though my incomplete records on this point show that severe inflammation can occur with little rise in the count; and by contrast, for example, a case that turned out to be apparently a simple alcoholic gastritis showed a leukocyte count of 54,000, with spasm that suggested perforation of an ulcer. Operation was urged, but refused; the patient immediately got well, and over a period of years has had no further trouble.

Also, unfortunately, severe pain, marked tenderness and spasm may be present where little actual trouble is disclosed at operation.

General Discussion of Symptoms

The familiar symptom of onset is, of course, pain. But the pain of appendicitis is not necessarily characteristic. It often resembles, rather, an ordinary stomach-ache, and the patient will often be able to assign a perfectly adequate cause for this, in having eaten a lot of canned fish, or stuffed himself with peanuts. He may not recognize his trouble as pain anyway; it is, to him, cramp-colic. It may not be referred to the right side for many hours, if, indeed, it localizes at all. It may be very mild, or improving, in the presence of gangrene; it may bear no resemblance to the pain of previous attacks; and, indeed, in one case of total gangrene, the only prominent symptom for many hours was vomiting, with diarrhea, there being only vague abdominal pain, and in the late stage some local protection and a trifle of tenderness. The appendix in this case was found wrapped completely in a mass of omentum, which I suppose accounted for the disguised symptoms; and it was wholly gangrenous.

It is a commonplace that sudden cessation of pain may coincide with gangrene; but it is not so generally emphasized that this cessation is not necessarily sudden, but may be gradual, the patient simply beginning to feel better. So that, in the absence of fever or rise in pulse, and with a perfectly tranquil expression of face, it is easy to be misled into thinking that his attack is recovering. Eight times in this group I was unsuspecting of gangrene, and only informed the patient as a matter of routine that it might be present, though his attack appeared to be getting better.

The pain of appendicitis may occasionally mimic other conditions, such as renal stone, as it did in two cases here. Finally, it must not be forgotten that the pain of appendicitis is not constant, but may vary from hour to hour; and it may unfortunately easily happen that the physician sees the case when there is no pain at all, so that the patient is sure he is recovering.

Tenderness: The most reliable sign of acute appendicitis is local tenderness, which is seldom absent. It is usually present even when pain is not at all localized; and its severity is in general a better indication of the severity of the process than any other symptom. How-

ever, it is certainly a good deal more typical in the late stage than it is earlier; it may not localize for many hours; and it may be trivial even when perforation has occurred. This is another example of the fact that the doctor who sees these cases early is confronted with much more difficulty in diagnosis than one seeing the case later on.

Case V: Mr. C., age 25. Pain in the middle of the epigastrium for twenty-four hours, with the feeling that the stomach was too full. Tenderness only in the epigastrium; denied any tenderness in the appendix region. Diagnosed acute gastric upset, and given medicine but not a laxative. Seen again after three hours, but he was not relieved. Palpation now revealed very marked tenderness in the epigastrium, so acute that ulcer was thought of, perhaps about to perforate. A few hours later, the same complaint; but careful palpation revealed definite tenderness over the appendix region. The patient stated, however, that when pressure was made there, the pain was in reality referred more to the epigastrium. No history of any previous digestive trouble nor of any attacks similar to the present. Operation showed the appendix enormously larger than normal, the size of collapsed small bowel, intensely distended and congested, with stasis of circulation in the distal third; imminent gangrene.

Comment: It is necessary to be suspicious of any stomach-ache not improving within a few hours, and to keep palpating for tenderness over the appendix.

Local tenderness will often be the guide to a correct diagnosis, when the other signs are far from typical, as in the following case:

Case VI: Mr. G., age 53. Onset twenty-four hours before admission with pain in the right testicle, which was sore on palpation and drawn up into the groin. Pain radiated upward, finally locating in the right lower abdomen, less marked in the flank. A little nausea, no vomiting. Uncomfortable feeling in the epigastrium, and felt as if too much gas in the right lower abdomen. The urine showed many red blood cells. Stated positively that this is his first attack of trouble; had never before had hematuria nor passed gravel, nor had indigestion.

Examination showed tenderness localized over the appendix, with a little voluntary protection but no spasm. Right testicle sore, not swollen; no tenderness over the kidney.

Discussion of this case emphasized the points that irritation of the testis and hematuria were not symptoms generally associated with appendicitis; but there was perfectly definite tenderness at McBurney's point. If this were an attack of appendicitis, it was a primary attack in middle life, and our experience had warned us that such attacks were apt to be severe, and sometimes confusing in symptoms. Emergency operation was, therefore, urged as the only safe procedure. It revealed a retrocecal appendix, constricted at the neck of the pocket in which it lay concealed, long, tense, thick and swollen, with edematous mucosa showing multiple petechiae—an acute obstructive appendicitis. Immediately after operation, all urinary symptoms disappeared, and during a year's further observation there was no recurrence.

Acute appendicitis is thus quite often a difficult disease to recognize in its early stage. I have no doubt that surgeons of very wide experience may attain a perfection of personal skill that enables them to estimate the severity of appendicitis with an unfailing approach to accuracy; but even the most expert, I doubt not, have their moments of uncertainty; and I am sure that, in general, the difficulties are such as to plainly account for some of the cases that come to operation too late—more is the pity—for it to be of benefit to them.

It has unfortunately been taught in the past that, unless some certain number—five or six—of the specific signs of the disease were to be found, and worse yet, that unless they appeared in a perfectly definite order, appendicitis could be eliminated. No doctrine could be more misleading nor more harmful; for there is no single symptom nor group of symptoms always present in anything like an early stage of the disease. Any one of them, in fact nearly all of them, may be lacking, and the patient may none the less have a gangrenous appendix, crying out to be removed in time to save his life.

The simple fact is this, that typical signs are late signs only, as they are in so many other ailments, and to wait until they all appear, in their order or out of order, is to allow the inflammation to progress until it may have reached a fatal severity. I cannot insist upon this point too strongly.

Particularly, I want to urge the fact that fever is never to be awaited. It is a late sign, not an early one. I have known one or two

physicians who would never consider their cases surgical unless they had fever, and therefore never referred them to me until the late stage, no matter how definite their pain and tenderness had been for hours, or a day or two. I have dreaded to see their cases come in, for I always knew they would be bad ones.

I cannot, therefore, avoid the studied opinion that there is only one safe rule to be followed when there is any reasonable idea that acute appendicitis may be present; it is relatively safe to operate; it is dangerous to delay. The burden of responsibility cannot help but rest upon the one who votes to delay.

It is true that by waiting some hours, the diagnosis of an obscure case will probably clear itself up, and everyone may then know that the patient has appendicitis; but that is no time to operate upon the disease. It must be done early, not late, if the death-rate is to be lowered.

Having gone thus far, I shall now find it necessary to look at the opposite side of the picture. Have not the writings and the teachings of many good physicians and surgeons urged, time and again, that operations should not be done for appendicitis when something else is really wrong instead? Is it not a fact that other things, not surgical, give similar signs, and that unnecessary operations have been done, to the patient's detriment, or at least without benefiting him? Is it not, therefore, better to wait and be sure of one's ground before operating?

At first sight, one would certainly agree with this position. But further analysis cannot help but show, first, that most of the things that are to be confused with acute appendicitis are themselves surgical conditions. They vary from ectopic pregnancy to perforated ulcer and tumors with twisted pedicle. Here operation is indicated anyway, as urgently as in appendicitis itself.

However, cholecysitits can be mistaken foi acute appendicitis, and the same is true of tubal inflammation, which can occur without vaginal tenderness. Both of these conditions, I am well aware, are better operated upon in the chronic stage. Further, urinary stone, and in children even pneumonia, may occasionally be mistaken for appendicitis. It is certainly cause for chagrin if operation is done in such a case; and I speak from experience, for I have been compelled to explore a child with a perfectly evident pneumonia, which I had confirmed by X-ray, because his abdominal symptoms were so severe that I could not take the chance of his having a perforated appendix as well. He had no appendicitis, and while he recovered without any trouble, I was certainly sorry to have opened his abdomen unnecessarily.

The penalty for operating where no acute surgical condition is present, then, is chagrin, and inconvenience to the patient, and no benefit to him, and it is certainly regrettable. But what about the penalty for failing to operate when severe appendicitis is really present? You are all aware what the penalty too often is: it is death. This is never to be forgotten.

Conclusion

Acute appendicitis is by far and away the most common abdominal emergency; it is rather often a difficult disease to recognize in its early stage; and, if it is allowed to progress, it may reach a fatal severity in spite of any form of treatment, at the hands of the most expert.

There is then only one safe rule to be followed: in any case of acute abdominal trouble that fails to subside after four or five hours treatment by rest in bed and abstinence from food, acute appendicitis is to be suspected. An enema may be given, but no laxatives, for these make the matter worse; and no opiates, for they conceal the very symptoms on which we are depending to help us in diagnosis. And, in my own opinion, even the ice-bag is better left off, for it has more than once concealed the process just about as effectively as an opiate.

Earlier in this paper, I spoke a word for the family physician. Now let me speak one for the surgeon. It is he who must shoulder the responsbility for the patient's recovery, if it is appendicitis. Therefore, he is to be called early if there is any reason to suspect the disease. I realize that the family doctor cannot call a surgeon every time someone has a stomach-ache; but where there is doubt, the only safety for the patient lies in calling the surgeon early.

This paper is not concerned at all with treatment in the later stage, after a couple of days have gone by, the advisability of the Ochsner regime, and so forth. The fact I wish to emphasize is simply this: the cases should not be coming to the surgeon in the late stage;

they should come early; for it is only by early operation that the present mortality can be lowered.

There is no medical stage in the treatment of acute appendicitis; it is urgently surgical from the first moment.

And when seen by the surgeon, nothing should be allowed for a moment to interfere with the immediate performance of the operation if it is indicated. Neither the patient's eminence, nor the apparent or real importance of his immediate business affairs, nor the prejudice or importunities of his relatives, no matter what their social prominence, nor any other extraneous circumstance, must have the slightest influence upon the decision as to treatment. There is only one imperative consideration: get the appendix out as quickly as possible, while there is yet time. Gangrene or perforation can occur within twelve hours, and commonly does occur within twenty-four. Procrastination too often has meant death. Waiting overnight for the sake of convenience, or in the hope of the attack subsiding, has too often sealed the patient's doom. Acute appendicitis is an emergency of the utmost urgency, and life itself hangs in the balance.

SUMMARY

Acute appendicitis is common and deadly; but it does not kill if recognized early and is promptly treated by operation. Many cases can be recognized at once; but others present much difficulty, and in them typical signs are late signs only.

It is obviously impossible to foretell the precise situation of the appendix as regards constricting adhesions, fecoliths, the adequacy of its circulation, and so forth, until it is actually seen; and these matters are vital to the patient, so that he is always in peril of greater or less degree until the operation is performed.

It is never permissible to take chances where there is any reasonable suspicion that the patient's affliction is acute appendicitis, for the disease is too deadly; and the physician should never sanction the fatal risk of delay.

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COMMON CHRONIC INFECTIONS OF THE VAGINA AND CERVIX.*

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It is hard to separate chronic infections of the vagina from those of the cervix. A long standing pathology of one usually means a pathology of the other. Whether more severe in the vagina or in the cervix will depend upon the kind of infection and other circumstances of the particular case.

Acute infections of the vagina and cervix will not be considered except to appreciate the fact that the acute is followed by the chronic. It is not necessary to mention the fact that a prevention or a cure of the acute will take care of the chronic. In a chronic case it is not what should have been done in the acute stage but what to do now.

Of the chronic infections of the vagina and cervix this discussion will only take up the more common. In short, it will bring before us that kind of a case you see so often, a woman of childbearing age or just past that period, who for sometime has had one or more local signs of chronic infection of the vagina and cervix, such as leucorrhea, altered menstruation, blood stained discharge, signs of pelvic disorder and possibly pain, irritability and disorder of the bowels and bladder, lacerations, erosions, uterine displacements, and systemic signs of localized infection. Of these leucorrhea is practically always present. Any suggestion as to successful treatment will be worth while.

The normal vaginal secretion is a pale blue liquid. It is acid in reaction. This acidity of reaction is a natural protective agent in the vagina against infection. The normal secretion of the cervix is a colorless liquid. This is contrary to the general impression. The normal secretion of the uterus is very small in quantity and is also colorless. The normal white albumen colored secretion which is often seen in the external os and in the vagina is caused by the cervical and uterine secretions coming in contact with the acid secretion of the vagina.

Most trouble in the vagina and cervix occur during the childbearing period, except the vulvo-vaginitis of children and senile vaginitis of older women. Acute vaginitis and cervicitis are usually caused by some form of bacteria or other parasitic organism. Practically every form of such bacteria or parasitic organism has been found in the vagina or cervix. These organisms more easily gain entrance into the tissue through trauma, such as labor, coitus, use of pessaries, and other accidents which cause lacerations, irritation, or an abrasion of

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the mucous lining. The lessening of the acid reaction of the vagina during menstruation makes infection more easily developed at that time. Also acute infectious diseases and chronic diseases of the heart and kidneys lower the body resistance and are contributory factors.

Those cases of acute vaginitis and cervicitis which are not treated and those which fail to respond to such treatment go into a chronic condition. The organism causing the infection in the acute stage may in the chronic state disappear and others take its place. This is notably true of the gonococci. The inflamed parts of the vagina and cervix are susceptible to other forms of bacteria and consequently most chronic cases develop a mixed infection.

C. J. Miller says that in chronic cervicitis the gonococcus, although hard to find, is the most common and the streptococcus, staphylococcus, and colon bacillus are the next in order of frequency. If the cervix is infected, the vagina will be so sooner or later. The reverse of this, however, is not always true. The trichomonas vaginalis attacks the vaginal and cervical mucous membrane but rarely invades the endocervix. In 600 pregnant women examined Bland found this organism present in 22.7 per cent. The exact relative proportion of all these infections cannot well be determined, and it is not necessary. Although practically all kinds of organisms may invade the cervix and vagina, it is safe to say that the gonococcus, streptococcus, staphylococcus, colon bacillus, trichomonas vaginalis, either singly or mixed, are the offending organisms in the more common of the chronic infections of these parts.

In addition to the symptomatology, a microscopical examination of the discharge in chronic conditions of the vagina and cervix is necessary for an accurate diagnosis.

On account of its disagreeable symptomatology and frequency, the infection caused by the trichomonas vaginalis deserves special mention. Here we have a free leucorrhea which is thick, yellowish, offensive, irritating and contains gas bubbles. Examination of the vagina will reveal inflamed punctate granules of the vaginal fornices and cervical mucous membrane. It has a salt and pepper appearance. The diagnosis can be confirmed by the use of the microscope. These parasites under the microscope are oblong or pear-shaped, when swimming freely in a liquid medium. The form may be changed if they come in contact with solids on the slide. The main point in this treatment is to recognize the fact that the endocervix is not infected. Bland reports a case where the cervix had almost been destroyed by previous cauterization when the infection was a trichomonas infection of the vaginal mucous membrane and not an infection of the endocervix.

Before beginning treatment of chronic vaginitis and cervicitis the nature and extent of infection should be ascertained. If the infection involves the pelvis or is caused by syphilis, tuberculosis, or malignancy, these conditions should receive first attention.

Treatment of chronic infection of the vagina and cervix itself should have two objects, one to remove or correct the primary causative or contributive factor, such as lacerations, displacements and organic diseases, the other to eradicate the infection and the pathology caused by it.

The general health of the patient, especially organic diseases, should be given proper attention from the time the patient comes under the care of the physician until discharge. Lacerations, displacements, and other like conditions, if of sufficient severity to interfere with proper function, should be corrected surgically. The choice of time for corrective surgery is best determined in each individual case, although it is the general rule to make an effort first to get rid of as much infection as possible. If gonococci are present, these should be eradicated before attempting surgery.

In treating the infection, the numerous methods used can be grouped under one general plan.

One step under this plan is the effort directed toward the infection of the vaginal and cervical mucous membrane. This embraces cleanliness, sterile and antiseptic douches and various medical agents used by local applications or on tampons. The antiseptic preparations used in the douches are almost household names and need not be enumerated here. The various local medicinal agents include silver nitrate, organic silver preparations, mercurochrome, acroflavine, and others of like nature. As an astringent, 1 per cent picric acid, 10 per cent tannic acid, ½ of 1 per cent zinc sulphate are at times indicated. No matter what chemical medication is used, it is necessary to

cleanse the vagina thoroughly and apply the treatment to every part of the vaginal mucous membrane. This is especially difficult in infection of trichomonas vaginalis. In this condition scrubbing may have to be used to remove the accumulation on the mucous membrane. Verrucae and ulcerated surfaces should be given routine treatment, although these conditions will improve after the infection has been eradicated.

The other step under the plan is to get rid of infection which is located in the endocervix. Infection is more difficult to control in the cervix than in the vagina because the infection is harder to reach, drainage more obstructed, and the glandular structure deeper.

The treatment of chronic infection of the cervix may be divided into a number of methods. One or more methods may be used. Of these, operative measures or thermo-cauterization should not be used if gonococci are still present.

Chemical Medication: The treatment of chronic cervicitis by chemical medication should be given at the same time treatment is given the vaginal and cervical mucous membrane. Remove the muco-purulent secretions in the external os, if present, with a saturated solution of sodium bicarbonate or 10 per cent solution of silver nitrate. Introduce a small dilator into the cervix which causes access to the cervical canal and establishes drainage. The same local medicinal agents employed in the vagina may be used on pledgets of cotton into the cervical canal and on tampons.

Diathermy: The success of diathermy is based on the fact that the current raises the temperature of the cervix as much as 47 degrees Centigrade and gonococci can be destroyed at a temperature of 40 to 41 degrees. Usually ½ to 1 ampere of current is used and the treatment averages about ten minutes and is given every three to five days. Diathermy has been used with considerable success in selected cases, especially in the hands of those who are conversant with its indication and technique.

Thermo Cauterization: This procedure was originated first by Hunner in 1906. It is especially beneficial in cases of infection of the deep tissues of the cervix, and in those with a small or moderate degree of laceration, erosion, or eversion. A small nasal cautery knife is best used for this purpose. Four to six linear cautery defects, about 4 or 5 millimeters in depth and as wide as the thickness of the knife, extending from well up into the cervical canal to the external os, are usually made. Erosion or eversion should be striped in the same manner. Nabothian follicle cysts are opened with the cautery. The treatment may be repeated in from four to six weeks if necessary. The chief post-operative danger is stenosis. This is best avoided by leaving unburned stripes of the endothelium between the lines of cauterization.

Sturmdorf Operation: This is a conical extirpation of the endocervix. In a modification of this method the extirpation is accomplished by the use of electro-coagulation or the cautery knife. The Sturmdorf operation is the most satisfactory way of eradicating a severe infection in the deep glands of the endocervix. It is best applicable to those cases without laceration.

Copper Ionization: Tovey has secured excellent results in the treatment of chronic cervicitis by copper ionization. A copper electrode is introduced into the cervix and the vagina is packed around it with cotton. A wet asbestos pad is placed under the buttocks. Ten to twelve milliamperes of galvanic current is used for a period of fifteen to twenty minutes. The positive pole is attached to the electrode and the negative pole to the asbestos pad. It is necessary to have the positive pole attached to the electrode as the negative pole has almost a dissimilar effect. Tovey says that 200 milliampere minutes will drive the copper into the cervical tissues to the depth of about eight millimeters. The milliampere minutes are arrived at by multiplying the amperage by the minutes the treatment is given. He says of the effect of this treatment; it contracts and hardens the tissue; dries discharges and coagulates the albumoids; it has a sedative effect; it decreases inflammation; it dehydrates the tissues; it is germicidal.

The treatment is given every ten days or two weeks. Tovey further states that "After a treatment, discharge lessens and disappears in a week or ten days. The cervix shrinks and, after three or four treatments, appears normal. The infection, erosions, nabothian cysts, and discharges also disappear."

The apparatus for this treatment can be purchased on the market at a moderate cost. We have used this treatment in twelve cases and

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the results in eleven were excellent. The other case had a complicating prolapse and perineal laceration. Here the result was negligible and relief was finally obtained by a vaginal hysterectomy and perineorrhaphy. We have successfully used an apparatus made with practically no cost. The current is furnished by a used automobile battery which was given us by the garage man. This furnishes practically the current needed for this work. We made the electrodes by using large copper wires of different sizes for the different electrodes. The insulation was cut from the end the length of the cervix. A sheet of copper covered with a wet towel takes the place of the asbestos pad. Later, a set of electrodes was bought on the market. Except for the difficulty of sterilizing the insulated parts, we prefer the copper wire electrodes to the ones purchased on the market.

In conclusion, I would like to emphasize the point that the successful treatment of chronic vaginitis and cervicitis depends more on its thoroughness and technique than upon the choice of any particular method. For that reason all or a part of the details of the treatment cannot be left to the nurse. The best success can only be secured when the treatment is thoroughly and well administered, and the result of each step determined by the physician himself.

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DIAGNOSIS AND TREATMENT OF VASCULAR DISEASES OF THE EXTREMITIES—WITH SPECIAL REFERENCE TO THROMBO-ANGIITIS OBLITERANS.*

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Vascular diseases of the extremities include a large group of conditions, of which thrombo-angiitis obliterans, arteriosclerosis, and Raynaud's are most often seen in general practice. These diseases are often thought to be rare and the treatment of little value, but they are really common and if the diagnosis is made early the treatment is satisfactory in most cases. Early literature regarding spontaneous gangrene and allied complications of these vascular diseases is often confusing.

Quesnay, in 1739, hinted that organic occlusion of the arteries might cause gangrene and, in 1817, Heberden made it a definite statement. Dupytren and M. Roche proved this point and may well be called the father of the theory of arteritis. Virchow made valuable contributions on embolus and thrombosis. Behier, in 1861, stated that arterial and venous obliteration caused moist gangrene and arterial caused dry gangrene. Maurice Raynaud, in 1826, wrote his famous paper entitled, "Local Asphyxia and Symmetrical Gangrene of the Extremities." He tried to prove that there could be gangrene without arterial or venous pathology.

Friedlander, in 1876, invented the term, "arteritis obliterans," but this applied mostly to diseases of other tissues. Winiwarter, in 1879, used the term "endarteritis and endophlebitis," and described fairly accurately the pathology. Wivedensky, in 1898, called attention to the prevalence of arteritis obliterans in Russia and its most common occurrence in males. Buerger, in 1908, published his classical description of the disease. His work clarified the confusion of the previous fifty-five different names for this condition.

ETIOLOGY

The etiology of thrombo-angiitis obliterans is still obscure. It has a predilection for Jews, but has been reported in practically every race. The negro is probably more immune than any other single race. Siebert, Meyer, and many others think tobacco is the cause. Meyer says sufficient amounts of nicotine, pyridin, cyanic hydrogen, and carbon monoxide are present in tobacco to cause the disease. Brown, Meleney, Mueller, Koyano, and others report cases in persons who did not smoke. Other theories based on various changes in the blood are given by many as etiological factors, as well as typhus fever, syphilis, the bite of a fly and certain dietetic abnormalities. Buerger is probably right in believing it to be of an infectious or toxic nature. In an analysis of three hundred cases at the Mayo Clinic, they found tobacco smokers in 98 per cent of the

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cases: infected tonsils in 75 per cent; periapical dental infection in 70 per cent; onset in cold weather in 68 per cent; Hebrews in 51 per cent; infected prostates in 49 per cent; syphilis in 3 per cent.

Raynaud's disease is practically confined to the female, though many cases in the male have been reported. In Monro's Monograph, in 1899, 62.6 per cent were in females. By improved diagnostic methods, many of these cases would now be correctly classed as vasomotor disturbances secondary to cervical ribs, peripheral neuritis, arteriosclerosis, scleroderma, or thrombo-angiitis obliterans. In the larger clinics today a diagnosis of Raynaud's disease in the male is always questioned. Heredity is a factor in 8 per cent of the cases, though many members of a family may show a subnormal vasomotor constitution. The age of the patient is generally between seventeen and thirty-five, with an average of thirty in most series.

Many factors are known to play an important part in the causation of arteriosclerosis, but its true cause is still unknown.

Pathology

One of the early changes in thrombo-angiitis obliterans is diffuse acute inflammation of the walls of the arteries and veins, with secondary thrombosis. There are seen erythrocytes, leukocytes, fibrin and giant cells. Purulent foci occur in the vessels. In the later stage, there is fibroblastic proliferation, organization, and later canalization, with marked periarterial "binding" which consists of excessive connective tissue around the vessels, binding them together. In arteriosclerosis, with thrombosis, the clot is acellular, and inflammatory reaction is absent. There are no giant cells, purulent foci, nor periarterial binding. There are atheromatous changes with deposits of calcium, cholesterol, and mucin.

Pathological changes are absent in the vasomotor types of vascular disease unless their end-result, gangrene in the severe types of Raynaud's, is considered. Altered physiology, however, is very easily observed in Raynaud's disease by changes of the nailfold capillaries. During the stage of pallor, few capillaries are visible; blood cannot be seen entering nor leaving, as there is a spastic segmented appearance of the capillary loops. During the stage of cyanosis blood enters from the arterioles, the capillaries dilate, become more numerous, and de-oxygenation increases with the increase of cyanosis. During the stage of rubor there is a rush of oxygenated blood from the arterioles due to the dilated capillaries. These changes are always in sequence and are important in the differential diagnosis, though their causes are not definitely known.

Symptoms

The symptomatology of Buerger's disease varies greatly with the type of the disease. Brown, Allen and Constam have designated thirteen clinical types as follows: 1, slow progressive; 2, absence of progression; 3, circulatory compensation; 4, acute fulmination; 5, extensive gangrene without rest pain; 6, venous involvement only; 7, normal pulsations in the usual palpable arteries; 8, vasomotor disturbances simulating Raynaud's disease; 9, association with arteriosclerosis; 10, absence of trophic disturbances; 11, severe rest pain; 12, absence of symptoms; 13, acute thrombosis. "Rest" pain means pain while the patient is at rest as contra-distinguished from claudication after exercise.

Most of their cases were treated for flat feet, rheumatism, and metatarsalgia, and some were treated for years before the diagnosis was made. A large group of cases have been operated upon for deep-seated infection of the feet and hands. There are acute cases with superficial phlebitis where the symptoms may have been absent before. Pain, archache, and later claudication are most often the first symptoms to occur. The others are color changes in the dependent position, cyanosis when elevated, coldness of the extremity as compared with the other parts of the body, thickened and brittle nails, hardening of the toe or finger tips, excessive cornification, small ulcerations under the nails which discharge serum and pus, trophic changes at the bases of the nails, severe type of rest pain, and, frequently, a characteristic posture such as sitting in bed holding the involved extremity. Edema often occurs in the affected part. Brown, Allen and Constam have analyzed the symptoms first to appear in three hundred cases as follows: Claudication in 50 per cent of the cases; fatigue in 15 per cent of the cases; cold extremities in 15 per cent; non-healing ulcers in 10 per cent; sudden arterial occlusion in 10 per cent; superficial phlebitis in 5 per cent; edema in 2 per cent; vasomotor disturbances in 2 per cent.

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The symptomatology of arteriosclerosis is well known.

The signs and symptoms of Raynaud's disease may be confusing, since there are many vasomotor disturbances of the spastic type that simulate this condition. There are patients who have cold, moist, clammy extremities, and when exposed to varying degrees of temperature have blanching of symmetrical single digits of the extremities. Mueller classifies these cases as having a vasomotor, neurotic constitution. There is another group in which the above symptoms are exaggerated both in severity and duration, and in which there are numbness, partial anesthesia, coldness and pain during the stage of cyanosis. Heat produces redness of the extremity and a sensation of burning. The next group of cases consists of those showing the characteristic changes of Raynaud's disease. There is marked pallor, cyanosis and rubor in the order mentioned. These changes come on with very slight change of temperature, are more severe in every respect, and last longer. The exaggerated cases of this class develop symmetrical gangrene.

The symptomatology of erythromelalgia is seldom confused. The disease was first described by Weir Mitchell in 1878. It is characterized by acute, paroxysmal attacks of pain followed by increased heat, sweating, paresthesia, increase in arterial pulsations, dilatation and distention of the peripheral veins, redness and swelling of the part affected. The pain and other symptoms are greatly exaggerated by the dependent position of the extremity and are made less intense when the part is elevated, and practically disappear when put in cold water. The pain is most frequent in the ball of the foot or heel. The redness is usually bright or there may be a bluish tinge. Paresthesia is confined to the hyperemic area, as a general rule. There may be atrophy of the skin, blebs, and trophic changes of the nails, but gangrene rarely occurs.

Diagnosis

The differential diagnosis of the occlusive types of vascular diseases is of paramount importance so that treatment may be started early. Ninety per cent of these cases have diminished pulsations of the larger vessels to the extremity affected. A small group of cases have involvement of the terminal vessels, and still others have color changes before diminished pulsations are noticeable. Allen has described several diagnostic methods very helpful in these cases. If the ulnar artery is suspected, locate the radial arteries and compress both tightly. The hands are closed for one minute, then the patient's fingers are extended. If the arteries are normal, the pallor produced by the occlusion of the arteries quickly returns to a rubor stage and in a short time to normal. If the ulnar artery is occluded, the pallor remains for a much longer time. If there is involvement of the digital arteries, there will be excessive pallor after two minutes of elevation, and excessive rubor after two minutes of dependency. By placing the hand in cold water, ironing out the normal color, and cutting off the blood supply, these changes will be exaggerated. Normally, in occlusive lesions, there is an excessive stage of pallor, and a short stage of rubor. Irregular pallor with slow return to normal usually means occlusion distal to the digital artery which may be palpable.

In thrombo-angiitis obliterans, pulsation of the peripheral arteries is absent in 50 per cent of the cases, diminished in 45 per cent, normal in 5 per cent. There is excessive rubor with the limb hanging down and excessive pallor with elevation. Claudication is usually present, gangrene is common, and sharp, stinging rest pain may be very severe. The gangrenous ulcerations are moist and inflamed, and frequently discharge pus, especially under the nails. There is superficial phlebitis in about 30 per cent of the cases. The age of onset is usually between twenty-five and forty years of age, 98 per cent or more of the cases occurring in males. At least 50 per cent of all cases are in Jews. Roentgenological examination of the arteries does not usually show sclerosis. In about one-third of the cases there are color changes following exposure to cold. The temperature of the extremities is low and edema is common. Buerger's circulatory test is positive.

In arteriosclerosis, pulsation of the peripheral arteries is absent in 50 per cent of the cases, diminished in 45 per cent, normal in 5 per cent. There is excessive rubor with the limb hanging down and excessive pallor with elevation. Claudication is present, gangrene is common, and rest pain is usually mild and aching. The gangrenous ulcers are dry, and superficial phlebitis is rarely present. The age of onset is beyond fifty-five years of age, 90 per

cent of the cases occurring in males. It occurs in any race, particularly in Jews. Roentgenologic examination usually showed some sclerosis of the arteries, and there is color change in 15 per cent to 20 per cent of the cases. The temperature of the extremities is low and Buerger's circulatory test is positive.

Pulsation of the peripheral arteries is normal in Raynaud's disease. There is no excessive rubor with the limb hanging down and no excessive pallor with elevation. Gangrene is rare except in the most severe types. Rest pain is usually absent. The gangrenous ulcerations are always superficial and punched-out in appearance. There is no superficial phlebitis. The age of onset is between seventeen and thirty-five years of age, 95 per cent of the cases occurring in females. The disease occurs in any race. Roentgenologic examination gives a normal appearance of the arteries. There are always color changes when exposed to cold. The temperature of the extremities is low and edema is absent. Buerger's circulatory test is negative.

In primary erythromelalgia, pulsation of the peripheral arteries is increased with dependence, but there is no excessive rubor and no excessive pallor on elevation. Claudication is absent, and gangrene practically never occurs. Rest pain is mild, and the burning sensation is severe. There is no superficial phlebitis. The age is between thirty and fifty years of age, occurring in females in 70 per cent of the cases, and occurring in any race. Roentgenologic examination is normal. There are no color changes following exposure to cold and the temperature of the extremities is always elevated. There is no edema, and Buerger's circulatory test is negative.

Acrocyanosis and acroasphyxia are mild forms of vasospastic disorders which were described by Mueller as those occurring in people with vasoneurotic constitutions. Causalgia is practically always caused by trauma to a peripheral nerve, mostly the median nerve. There are tender joints, muscle spasm and glossy skin. It is also a vasospastic condition. Scleroderma is a disease of the skin but is occasionally confused with spastic vascular diseases. Its most characteristic feature is the

"Tentative Clinical Classification of Arterial Diseases," by Brown and Henderson

- **Functional or vasomotor types**
  - **Local distribution**
    - Vasoconstricting types
      1. Multiple-phase color reaction; Raynaud's disease.
      2. One-phase color reaction; acrocyanosis, dead finger, local syncope.
    - Vasodilating types: Primary erythromelalgia.
  - **General distribution**
    - Vasoconstricting types: Primary or essential hypertension (early stages).
    - Vasodilating types: Primary or essential hypotension
- **Organic types**
  - **Local distribution**
    1. Arteriosclerosis, with or without thrombosis; diabetic gangrene.
    2. Thrombo-angiitis obliterans.
    3. Arteritis of known infectious origin (rheumatic).
    4. Aneurysm with or without thrombosis.
  - **General distribution**
    - Arteriosclerosis.
      1. Primary.
      2. Secondary to hypertension.

leathery feel and appearance of the skin.

If one takes into consideration the signs and symptoms of each disease and then refers to the "Tentative Clinical Classification of Arterial Diseases," by Brown and Henderson in the *Journal of Bone and Joint Surgery*, 1927, IX, pp. 613-627 (see p. 291), he should have little difficulty in arriving at a correct diagnosis in most cases.

Prognosis

The prevailing idea that Buerger's disease is chronic and progressive is erroneous. Our best proof of this is that collateral circulation is noticed when amputated legs are injected with radiopaque substances. The disease is usually self-limiting, since the occlusive nature of the disease stops and the course of events is canalization, organization, the formation of new vessels, and adequate collateral circulation. If this be interfered with by trophic changes, edema and gangrene, in most instances the process has been going on for some time. Therefore, the favorable prognosis of Buerger's disease, arteriosclerosis, and to a less extent Raynaud's disease, depends on the early recognition and the institution of proper prophylaxis and treatment. After gangrene has started, the results in many cases are good, but obviously less favorable. The period in most cases between the onset of the initial symptoms and the presence of gangrene should be emphasized. There have been reported cases in which there were symptoms of twenty-three years' duration before gangrene occurred. This might well be called the prodromal syndrome during which many of the patients have been treated for frostbite, flat feet, metatarsalgia, rheumatism, and frequently operated upon for deep-seated infection about the extremities with the result of slow healing or gangrene. The prognosis, finally, depends upon three things: First, early diagnosis; second, proper prophylaxis and long continued treatment; third, avoidance of surgery of the extremities for minor infections in the presence of this disease.

Prophylaxis

Hygienic measures are of the first importance. Early eradication of infection and the avoidance of trauma are essential. The extremities should be kept warm, clean, dry, free of scaly skin, brittle nails, and corns. Scaly skin and brittle nails are best treated by the application of hydrous lanolin. Surgery on corns and infection about the nails should be avoided in the presence of this disease. Injecting superficial veins with poor pulsating arteries is also very dangerous. Footwear should be loose, with two pairs of woolen socks frequently changed. Waterproof shoes retain the perspiration and those that allow ventilation also allow water and cold. If they become wet or greasy, the air spaces are filled and they become good conductors of cold.

Reestablishing the circulation in vascular diseases and frostbite is important. If it is quickly reestablished, it produces a hyperemia and transudation of serum into soft tissues, causing an edema which compresses the blood vessels and lessens the circulation in an already inadequate blood supply. This is also accompanied by excruciating pain which patients describe by saying their "fingers are busting." These conditions should be treated by the application of dry, moderate heat and massage. Rubbing of snow or excessive heat on the part affected is dangerous. If solutions are used, they should be isotonic, and care should be taken not to injure the skin. Alcohol and tobacco should be discontinued; however, excessive smoking is often begun with the onset of severe pain.

Treatment

There have been over one hundred different treatments tried for Buerger's disease, but practically all have met with failure. The present method of treatment as recommended by Brown, Allen and Mahorner is most encouraging. They divide treatment under five heads, as follows:

1. Those with extensive gangrene with or without rest pain. The treatment is amputation, and vaccine if necessary for pain and healing.

2. Those with mild trophic changes with severe rest pain. The treatment consists of medical measures for relief of pain. If this is successful, then medical and physical measures are begun to increase the collateral circulation:

a. Rest.
b. Heat.
c. Contrast baths.
d. Exercises.
e. Removal of infection.
f. Prophylactic measures.
g. Typhoid vaccine intravenously.

h. Lumbar or thoracic ganglionectomy in suitable cases.

3. Those with mild trophic changes without rest pain. The treatment consists of medical and physical measures, depending upon the progress of the disease.

4. Those with severe rest pain without trophic changes. The treatment is the same as in Group 2.

5. Cases with rest pain and trophic changes. Prophylactic and medical treatment to increase circulation and prevent gangrene.

Samuels is of the opinion that absolute abstinence from smoking is essential in healing gangrenous ulcers. He stresses the importance of rest in bed in a horizontal position, the cleansing of the gangrenous areas with chloramine solution and the application at first of anesthetic ointments, then soothing antiseptic ointments, and the use of 5 per cent saline intravenously every other day. I have in several cases used chloramine to cleanse the superficial ulcers, and later acroflavine, exposing the area to sunlight during this period, and, finally, skin grafting the denuded area, with excellent results. I have been unable to confirm the advantage of saline over typhoid vaccine.

According to Dean Lewis, the injection of 60 per cent alcohol in the popliteal nerves relieves the pain in patients with marked suffering and should be tried before ganglionectomy is considered. The motor paralysis following this injection lasts only about three months.

Summary

Buerger's disease is a self-limiting disease in most cases. Amputation is never indicated in the early cases, and only when gangrene is extensive and other treatments have failed. Prolonged treatment and conservatism should be practiced, especially conservatism in regard to surgery. Pain and gangrene are now controlled in cases that were considered hopeless a few years ago. This disease is common, and if sought for will be found.

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TREATMENT OF SECONDARY ANEMIA.*

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Anemia may be defined as a reduction in the amount of circulating oxygen carrying constituent, namely, hemoglobin. A reduction of circulating hemoglobin is in most instances associated with a reduction of the cells which carry hemoglobin, namely, the red cells.

Under normal conditions, or, we might say, during normal metabolism, there exists a very delicate balance between the production and destruction of red blood cells. Small variation in either formation or destruction is usually compensated for, but when this balance or equilibrium is greatly changed and is continued over too long a time, then anemia exists.

Secondary anemia may be produced by mechanical blood loss, by alteration in blood formation, or by increased blood destruction. If blood is lost, or if there is an increase in the

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destruction of red corpuscles, the red bone marrow compensates by producing red cells at a more rapid rate than normal. In such a case, especially if the loss or destruction is great, the red corpuscles so produced are frequently small, contain a subnormal amount of hemoglobin, and may contain a nucleus, which denotes that the cell is not fully matured. In the course of time these immature cells are replaced by normal cells and the red bone marrow returns to a normal rate of production. But if the loss or destruction is continuous or intermittent, as in chronic anemiaes, the blood contains more and more abnormal red cells. The erythroblastic tissue further attempts to compensate for this continuous demand for red cells by invading and replacing the yellow marrow which does not form red blood cells. If the demand is in excess of the capacity of the erythroblastic tissue to respond, the condition of the blood seen in the chronic anemias develops, namely, a decrease in number of red blood cells, with loss of hemoglobin, and presence of abnormal type of cells.

In anemia due to repeated blood loss, as in ulcers of the gastro-intestinal tract or fibroids or polypi of the uterus, the obvious factor is the loss of blood. In anemia caused by the hemolytic toxins, the destruction of the red corpuscles is the chief factor concerned. In anemia secondary to malignant disease, as in cancer of the stomach, the anemia may be due to several factors. First, there is a toxemic condition caused by absorption of products of decomposition in the growth itself: hemorrhage may be present, an increase in the destruction of red corpuscles, disturbance of nutrition leading to lack of proper food supply for the erythroblastic tissue, and the possible action of the autolytic products of the cancer cells which may inhibit the activity of the bone marrow.

In the treatment of secondary anemia, organic disease must be looked for. Malaria, syphilis, nephritis, chronic poisoning from known chemicals or biological agents, infections, malignancy, etc., must be treated in addition to the treatment of anemia.

In this paper I shall discuss briefly the effects of diet, drugs and blood transfusion.

Diet

The most important experimental work concerning the effect of food on blood regeneration has been done by Whipple and his associates and Minot and Murphy, of Boston. Their carefully controlled work on dogs has demonstrated clearly the value of certain foods in accelerating blood regeneration following acute hemorrhage. McCullum has pointed out that a diet of kidneys and liver give an exceptionally high quality protein for a low protein intake, and can enhance remarkably the growth of animals.

Excess of fatty diet is considered by many to be contra-indicated. Fat is thought to favor putrefaction within the intestinal tract, and the substances thus produced cause a destruction of red blood cells.

Foods containing high iron content are desirable because of favoring hemoglobin production. Fruits, leafy vegetables, strawberries, apricots, peaches and prunes are especially beneficial.

The one oustanding remedy in the treatment of anemia is liver. Liver is not a specific in secondary anemia, nor is its effect so spectacular as in pernicious anemia. In pernicious anemia the response to liver feeding is noticed within the first ten days. In secondary anemia the results are less striking and a period of several weeks' feeding is sometimes required before appreciable results can be expected. Since liver must be given in large amounts and continued over a long period of time, it is extremely difficult to get some patients to take the required amount. Whipple, working with Walden of the research laboratory of Eli Lilly & Company, had produced a liver fraction or extract, which weighs but 3 per cent of the original whole liver, yet contains 65 to 75 per cent of the potency of whole liver. The secondary anemia fraction as prepared for this work is palatable and can be digested in large amounts without any clinical disturbance. The diet then should be one selected for its richness in vitamins, containing large amounts of fruit juices and vitamin-containing vegetables, liver, one-half pound, per day or its equivalent in liver portion, kidney, beef muscle, sausage, green and leafy vegetables, apricots, peaches and prunes. Yeast is beneficial in some cases as it may bring about a change in the intestinal flora.

Drugs

Experimental work, also clinical experience, has demonstrated conclusively the value of iron both in anemia following hemorrhage and that due to faulty nutrition. Reports from Whipple and Dykes show that iron supplements the

action of other substances, and, in addition to providing a supply of iron, it probably has a "salt action." Liver together with iron is more effective than liver alone or iron alone in anemic conditions. The preparation of iron used does not make any material difference, but should always be given in large doses and continued over long periods of time. Copper has recently been advocated as a supplement to iron. Where hemoglobin regeneration has been slow under iron medication alone, marked improvement has been noticed when copper was used in combination with iron. Lewis, of Nashville, has recently reported very favorable results in the treatment of anemia in children. The preparation used is .5 per cent solution of copper sulphate, given in one to two teaspoonful doses three times a day.

Arsenic appears to have little effect on blood regeneration. It is indicated in treatment of anemia associated with syphilis or malaria. Desiccated stomach has been used in some cases and also extracts of spleen and bone marrow, but are of doubtful value.

Tranfusion

Our enthusiasm seems to come and go regarding transfusions. A few years ago a great many more transfusions were done for secondary anemia than are being done now. I have seen some of the most gratifying results from transfusions, following severe hemorrhage, or bleeding continued over a long period of time. Of all the methods of intravenous treatment in shock, blood transfusion most nearly approaches the ideal. It will raise the blood volume, increase blood pressure and supply the needed oxygen carrying corpuscles. In chronic anemia when the volume of blood has been low for a long time, and especially in infections or anemia following infections, transfusions are of great value. I have seen a case of the most severe and prolonged bleeding from a gastric ulcer, in which the patient was rapidly approaching dissolution, entirely relieved of hemorrhage within a few minutes after transfusion. In prolonged bleeding from the nose, uterus, or other organs, transfusions have often given immediate relief in controlling the hemorrhage. Before surgical operation in anemic patients or in those having lost much blood, there is no other remedy of such value as blood transfusion.

The blood must be properly matched, and Wassermann test made, unless the case is an extreme emergency. If the blood is carefully matched and is not given too rapidly, the reaction should be slight. Therapeutically, it makes little difference as to the use of citrated blood or blood given direct. We prefer direct transfusion as the reactions are less.

Summary

The treatment, then, should consist of a well balanced diet, containing large amounts of liver or liver extract, kidneys and muscle fiber, leafy vegetables and fruits, which, together with iron and copper, given in large doses, and blood transfusions, make up our best treatment for secondary anemia.

THE VALUE OF BLOOD EXAMINATIONS IN PUBLIC HEALTH WORK.*

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The correlation of the findings on examination of the blood with the practical application of preventive medicine has progressed steadily with discoveries in these fields. Blood examinations constitute a relatively large percentage of the laboratory work, which has an important place in public health. They have helped to solve many questions of epidemiological importance, such as the presence and extent of a communicable disease, the determination of carriers, and the relative immunity of an individual or a group, and they are frequently a substantial aid in arriving at an early diagnoisis, thereby facilitating control.

Most of the examinations performed on blood in public health laboratories are of a serological nature, and may be subdivided into those determining the presence of specific agglutinins, and the complement-fixation tests. In the former category are included those procedures aimed at the diagnosis of such important diseases as typhoid, typhus and undulant fevers, and tularemia. The Wassermann reaction is the striking example among complement-fixation tests and is more extensively performed today than any other laboratory determination. Serum precipitation tests, such as the Kahn, have assumed relatively great importance in the control of syphilis in recent years. The examination of the blood smear also has an important place in the health laboratories of those communities in which malaria is prevalent.

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The agglutination reaction, first described by Wright[1] for the disease called Malta fever by him and now termed undulant fever, is a notable example of delay on the part of the medical profession in applying an important test to practical work. Not only did Wright describe the technic for the agglutinin determination but he also pointed in a later article[2] to the possibilities of this test in working out the geographical distribution of undulant fever and reported the occurrence of this disease in India,[3] although it had previously only been described in certain Mediterranean countries. In spite of this brilliant work, undulant fever was not recognized as being endemic in the United States for fourteen years, until Gentry and Ferenbaugh[4] located a focus in one of the goat-raising sections of Texas. This failure to recognized undulant fever was probably due to its close similarity to typhoid fever and tuberculosis, to the assumption that it occurred only in those people drinking goat's milk, and possibly to the varying agglutination power of sera from undulant fever patients. Evans[5] did much to increase our knowledge of the extent of the disease by demonstrating that Brucella melitensis and the organisms of infectious abortion in cattle and swine are practically identical. Observations within the past decade or two indicate that the disease is world-wide in distribution, and routine performance of the agglutination test for Brucella melitensis on all sera submitted to laboratories for Widal examination has done much to indicate the prevalence of this fever in the United States.

Tularemia offers another example of the accomplishments attained by close association of field work with the laboratory. Agglutination tests have also assumed an important role in showing the geographical distribution of this disease and cases have now been reported in all of the United States, except Maine, New Hampshire, Vermont and Connecticut, as well as a number of countries in Europe and Asia. Unfortunately the blood serum from some cases of tularemia shows a cross agglutination with Brucella melitensis, but the organism of tularemia may be separated by agglutination absorption tests. This subject has been taken up in detail by Francis and Evans.[6]

The importance of the Widal test for typhoid fever and the Weil-Felix agglutination reaction for typhus needs hardly to be discussed. The employment of the latter test has furnished part of the evidence necessary to prove that the so-called Brill's disease of the United States and European typhus are identical. The inability to demonstrate the presence of lice on cases infected with Brill's disease led to doubt for some time as to the identity of these diseases, in spite of the elaboration of similar agglutinins in the blood serum in both diseases. Recently, however, Dyer, Rumreich and Badger[7] have shown that Brill's disease has an animal reservoir in the rat an dthat fleas from these animals of the types Xenopsylla cheopis and Ceratophyllus fasciatus are capable of producing a disease in monkeys and guinea pigs in all respects similar to typhus fever of the European and American (Brill's) types. Cross immunity tests further substantiate these observations.

The Weil-Felix reaction has also been found to be positive in cases of spotted fever of the Rocky Mountains. A disease, immunologically indistinguishable in animals from Rocky Mountain spotted fever but distinct from both European and American typhus, has recently been described.[8] It has been noted to occur in man in the eastern portion of the United States. The exact distribution of both American typhus and Rocky Mountain spotted fever is unknown, and it therefore behooves all physicians to insist on a Weil-Felix agglutination test for patients having a fever of unknown origin, especially when a rash is present.

The Wassermann complement-fixation test stands out more than any other procedure as one of the most important laboratory aids in preventive medicine. The prevalence of syphilis is believed to be sufficiently high to justify this statement, and there can be no excuse for failure to adopt routinely a serological test for syphilis by all organizations caring for the health of mankind.

The Division of Venereal Diseases of the United States Public Health Service estimates that there are 643,000 cases of syphilis constantly under medical care in the United

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States. This estimate is based on surveys in twenty-five localities, ranging from small rural communities to the great metropolises of the country—the result of a one-day census of the number of cases under treatment or observation as reported by 31,847 sources of treatment. These physicians, hospitals, clinics and institutions were administering to an estimated population of 24,000,000 persons.

An unpublished compilation of reports on file in the United States Public Health Service, of forty authors giving the results of a Wassermann test in 47,363 pregnant women, demonstrated that 6.9 per cent were positive. These studies range from less than 100 women up to more than 7,000, and most of them were delivered in hospitals of the United States and Great Britain. The per cent of positive Wassermanns ranged from less than 1 per cent, as reported by Kilduffe,[9] to a study by McCord[10] among negroes of 22.5 per cent. Obviously this per cent of positive Wassermanns, nearly seven per 100, is higher than would be expected in an unselected sample of adult females from the general population.

In a total of 28,195 negroes in six counties in as many southern States, 5,785, or 20 per cent, were found to have a positive blood Wassermann,[11] and all of these cases yielded a second positive complement-fixation or precipitation test on the recheck. There is no doubt that these figures justify the routine employment of a serological test for syphilis in hospitals, clinics, and similar institutions, and their use in making surveys of the general population is one of the more important public health functions.

There are several other blood examinations which have a fairly important place in preventive medicine but these will not be considered at this time. It will be sufficient to stress, in concluding, the great importance of the employment of the undulant fever agglutination test and of the Weil-Felix reaction in all cases of fever of unknown etiology, and to urge a continual and persistent search for syphilis.

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Contentment is a frame of mind
That we, alas! too seldom find.

—*Selected.*

TYPHOID ULCERS OF THE STOMACH: REPORT OF A CASE.

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and
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That lymphoid hyperplasia and ulceration may occur in the stomach in typhoid fever is recognized by the authors of several textbooks of pathology and of surgery. Very few reports of actual cases are to be found in the literature, however.

Walter Hughson[1] comments with regard to typhoid fever: "Though the disease is characterized by ulceration of the small intestine, involvement of the stomach in typhoid is a complication of the greatest rarity. Sometimes gastric distress is complained of and vomiting may occur. An actual hematemesis may develop. Perforation of a typhoid ulcer in the stomach has been reported, but this unusual circumstance should not be confused with the possibility of perforation of a simple gastric ulcer."

Powers and Hala[2] simply state that lymphoid hypertrophies have been observed in the stomach in typhoid.

Kaufmann[3] observes that "In typhoid fever, the lymph follicles (of the stomach), the number and extent of which are extremely variable, swell, undergo necrosis and ulceration, but very rarely."

Proskauer,[4] in 1907, reported a case in which typical typhoid ulcers were found at autopsy in the stomach and duodenum of a nine year old boy. He also cited a case from the literature prior to that date in which such ulcers were described in the duodenum.

Case Report

The patient, a white male, 30 years of age, working as a street car conductor, became ill with a severe headache and stiffness of the neck on August 11, 1930. The following day he had two chills and a marked fever. He vomited several times on August 15th and 16th, and complained of some abdominal soreness. On August 19th he was admitted to the medical service of Memorial Hospital with a tentative diagnosis of typhoid fever.

Physical examination at that time showed a flushed hot skin, a brown furred tongue, and a few rose-spots over the chest and abdomen.

Heart and lungs were not abnormal. Pulse was dicrotic; blood pressure, 130/80. The spleen was palpable, and there was a slight tenderness over the abdomen. Urine, blood chemistry and Wassermann findings were essentially negative. The W. B. C. was 5,000, with 70 per cent neutrophils. Widal test was positive for typhoid.

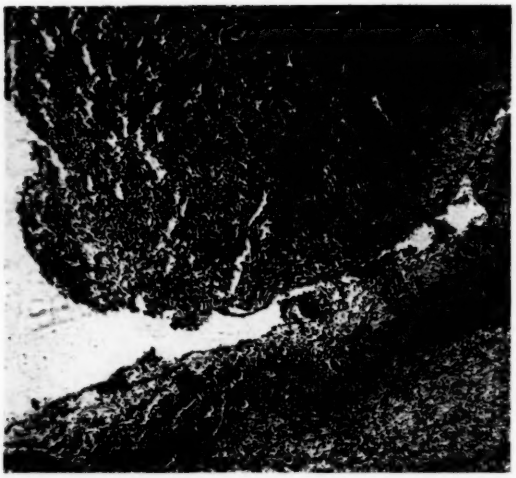

Fig. 1.—Margin of one of the ulcers in the stomach. Diffuse inflammatory inflammation without organization borders a necrotic surface.

During the night of August 20th the patient had several liquid stools, and at 5 A. M. complained of sharp colic-like pains in the lower right abdomen. He began hiccoughing at that time. The W. B. C. was increased to 13,200, of which 80 per cent were neutrophils. A laparotomy was performed that noon under spinal anaesthesia. A diffuse suppurative peritonitis was found, with a thin yellowish exudate and beginning adhesions between loops of bowel. The lower ileum presented a perforation of 1 mm. in diameter near the cecum. This was sutured and the abdomen closed with drainage.

The temperature ran a septic course, rising to 102° and on one occasion to 104° F. The patient suffered from distention. Gastric lavages yielded large amounts of dark green fluid. On August 25th the urine showed traces of albumen with sugar three plus; the W. B. C. was 5,400. Death occurred on September 1, 1930.

Autopsy: Gas having a sulphurous odor escaped from the peritoneal cavity on opening the abdomen; about a liter of grayish-white pus was enclosed. On opening the stomach two ulcers, approximately 1 and 1.5 cm. in diameter, were found on the posterior surface of the greater curvature near the pylorus. They extended through the mucosa; their edges were ragged, not elevated, indurated, or discolored. Duodenum and jejunum were grossly normal. The ileum was distended, and its terminal portion embraced several ulcers having soft grayish edges and bases. The site of an operative repair of a perforation was found 10 cm. from the ileocecal junction. This loop was bound down on itself by fibrinous adhesions. A perforation about 2 cm. in diameter with semi-fluid gray edges occurred immediately proximal to the operative site, while a similar small perforation occurred at the site of one of the sutures. Mesenteric lymph glands were enlarged and hemorrhagic. The liver was somewhat enlarged, smooth and friable. The spleen was enlarged, soft and red; the Malpighian corpuscles were readily seen. The kidneys, ureters, bladder, adrenals, gall-bladder, and pancreas were grossly normal.

Fig. 2.—Musculature and serosa at site of the ulcer shown in Fig. 1. The infiltration is seen to extend throughout the wall.

In the thorax a few fibrous adhesions were associated with the pulmonary apices. Both lungs were hyperemic, with partly atelectatic lower lobes embracing foci of bronchopneumonic consolidation. The myocardium was soft and pale, the endocardium opaque and

gray. Otherwise the thoracic structures were not remarkable.

Microscopic description: Toxemia of moderately marked severity was manifest throughout the viscera. In the myocardium, muscle fibers were swollen, presented fibrillar disintegration, and were fragmented. Epithelium in the liver, kidneys, pancreas and adrenal glands was in a state of granular cytoplasmic swelling. Reticulo-endothelial hyperplasia was seen in the spleen, and perivascular histiocytic aggregations occupied a scattered distribution in the tissues generally. Focal necroses occurred in the liver with more bulky areas of coagulative necrosis in the mediastinal and mesenteric lymph glands.

A moderately marked passive hemic congestion was seen in lungs, liver, spleen, adrenal glands and kidneys. In addition, areas of atelectasis, of bronchopneumonia, and of hemorrhagic infiltration occurred in the lungs.

The ulcers: The ulcers of the stomach and those of the ileum which had not perforated were sufficiently alike in structure to permit their being described together. In both, the bases lay in the muscular or deep in the submucosal strata. In some instances the bases and margins were washed clean of necrotic debris, while in others tissue in a state of coagulative necrosis embracing thrombosed venules lined the ulcers. A variable amount of inflammatory infiltration, consisting essentially of lymphocytes and macrophage histiocytes in an oedematous stroma, bordered the surface of the ulcers. This was marked in some sections, and associated with vascular endothelial hyperplasia and lymphatic vessels distended with phagocytes. This reaction extended through the interstices of the muscular strata to the subserous stratum in most of the sections. The latter was oedematous and embraced a few polymorphonuclear leucocytes in addition to the preponderance of mononuclear cells; in some areas a fibrinous serosal exudate was still intact. Fibroblastic proliferation was meager and indefinite everywhere.

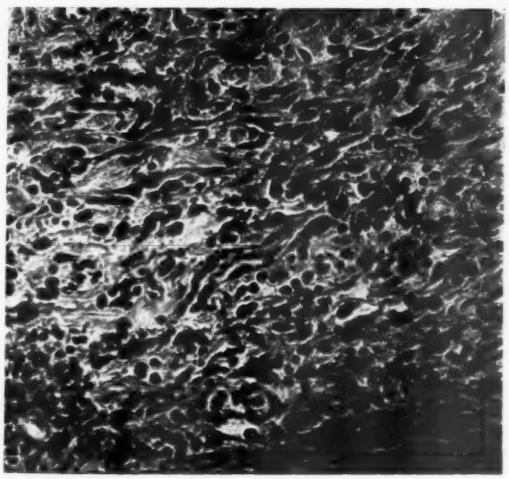

Fig. 3.—A higher magnification to show the character of the inflammatory infiltration about the ulcer shown in Fig. 1. Lymphocytes and histiocytes (mononuclear wandering cells) predominate.

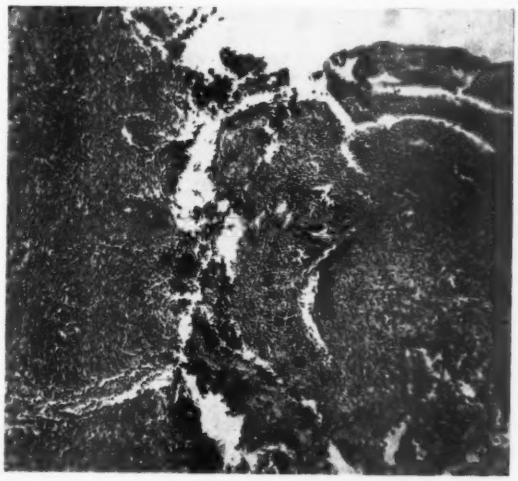

Fig. 4.—Margin of one of the ulcers in the ileum for comparison.

Comment: The ulcers of the stomach are unlike chronic gastric ulcers in the absence of granulation tissue induration, and unlike acute non-specific ulcerations in the absence of a predominance of polymorphonuclear leucocytic infiltration and exudation. As judged by the type and degree of inflammatory response, the ulcers of the stomach and of the ileum are of the same relatively short duration. The reactions in the tissues about them are characteristic of that of typhoid infection, in which lymphocytes and macrophage histiocytes predominate in the infiltration. Except for normal histological considerations and perhaps a somewhat greater degree of infiltration in the ileum, the ulcers in the two locations cannot be distinguished from one another. We are left with the inference that the ulcers of the

stomach in the case herein reported are typhoid in nature.

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INTERMITTENT COMPLETE HEART BLOCK: A CASE REPORT.*

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In the patient whose case is here reported, complete heart block of two years' duration has alternated with, and in recent months has been largely replaced by, normal sinus rhythm. This sequence of events is extremely rare, has both physiological and clinical interest, and from the therapeutic standpoint in the present instance, consideration of the value of the general management of the patient—in comparison with what was not done in the use of drugs—is of some practical importance.

Case Report

H. W., a white man, aged 80 years, a retired surgeon, was referred by Dr. John Minor for electrocardiographic study and opinion on October 26, 1929. His chief complaints were of slight dyspnea on exertion, of an occasional sense of pressure in the head, and more particularly, of a slow pulse, which would drop sharply from 70 beats per minute to a rate of 38 or 39 beats per minute.

The family history was irrelevant and with no interruptions by ill health the patient had led an active and distinguished professional life until past 70 years.

In April, 1929, the present illness began with influenza, followed by pneumonia. The patient was in bed for a month, and convalescence was marked by weakness, shortness of breath on exertion and the slow pulse.

No fainting attacks and no pain had occurred. On exercise there is a "feeling that the heart is there." The pressure or fullness in the head is occipital in distribution, is more noticeable in the evening, is often present after meals, and the pulse is then slow. Digestion has been impaired, the patient has lost ten pounds, sleeps poorly and has nocturia three times. The urine has been highly acid. For a month he has had cramps in his legs, chiefly at night.

Examination showed a small-framed, rather frail, mentally alert elderly man, who was able to walk into the office, without dyspnea. The blood pressure was 160/90, the peripheral arteries moderately thickened, the retinal vessels not changed. The aorta was not widened, the heart was slightly enlarged to the left. The sounds were of fair quality, and none were adventitious.

The apex rate was synchronous with that at the wrist, at 41 beats per minute. Rhythm was regular.

The other organs were without pathological findings and signs of congestive failure were absent. The reflexes were active.

The electrocardiogram confirmed the clinical diagnosis of complete heart block by demonstrating auricular and ventricular rates of 75 and 41 beats per minute, respectively. The amplitude of all the waves was good and there was no evidence of intraventricular block. From the supraventricular type of QRS complex, the ventricular pacemaker was placed in the A-V node or upper bundle.

From the standpoint of the patient's general condition of health it seemed wiser to build up his strength by promoting sleep and digestion. He was permitted to continue his golf in moderate doses as a mental and physical tonic, and iron, quinine and strychnine was also suggested.

A year later, October 14, 1930, the patient came in for a second examination, with the history that two weeks before he woke up in the morning and found his pulse 72. His head "felt different and more natural." This rate continued for two hours, then dropped sharply to 39. With the transition there was no faintness. The patient found that with a slight amount of activity his rate would remain at 70 or 72 beats per minute, never higher, and with more exertion would abruptly fall back to 38 or 40. Such changes occurred without dizziness, faintness or other symptoms.

His general condition throughout the year had improved, his physical signs were unchanged. The blood pressure at one examination had been 200/90.

At this examination, it was of interest to find that the ventricular rate approached 50

*Read before the George Washington University Medical Society, November 21, 1931.

beats per minute (a level intermediate between the idioventricular rate at 40 and the rate of 70 noted by the patient) and that the regularity of the rhythm was interrupted by frequent coupling of the beats. The electrocardiographic findings, therefore, were of unusual interest. The auricular rate was again 75 per minute, with complete dissociation. Alternate contractions of the ventricle were followed by the beats which produced the coupling found on palpation. The slight variation in amplitude of the QRS and T waves of the second beat of each couple gave additional evidence of two pacemakers. That the second pacemaker was less assured in its position of control might be inferred from its falling out after each alternate beat.

The patient's plan of management was unaltered and he was again seen through the courtesy of Dr. Minor on October 7, 1931.

During the winter in the South he had played golf and felt better for the exercise, but during the summer in Boston he was dyspneic upon exercise. In general there had been little or no palpitation or other symptoms. Since September 15th, however, his heart action has shown frequent transitions from a high level of 72 beats to a low level of 38 beats per minute. Such periods of change have been accompanied for a second or two by a feeling of pressure in the head, dizziness, and of suddenly going blind. There has been no loss of consciousness. The rate is nearly always 70 on arising and may last all day, but too much exercise brings the slowing. The cramps in the leg still occur at times and occasionally there is a twinge of precordial pain. For several weeks there have been unusually severe digestive disturbances, with constipation and lower abdominal pain. The gastro-intestinal study was negative.

On this visit the patient walked in and sat down with a pulse which was regular in rhythm and at a rate of 34 per minute. While I was counting it, it rose abruptly to 64 per minute, without intervening pause or irregularity and without subjective symptom. It remained at this level or a few beats higher during the visit. The blood pressure was 148/86. Vagus pressure brought no change in rate.

The electrocardiogram showed sinus control of the heart, with a rate of 65 beats per minute and a P-R interval of 0.24 sec.

Several weeks later the patient reported that his rate was remaining fairly constantly at the higher level, but never above 72. With care of his digestion, he was much improved.

Comment

In summary, a man of 80 years, with hypertension and arteriosclerotic changes both in heart and peripheral vessels, developed complete heart block after influenzal pneumonia. Following a stage during which the idioventricular rhythm was fairly constant, there ensued with improvement in his general health a period marked by frequent sharp transitions between sinus control and complete block.

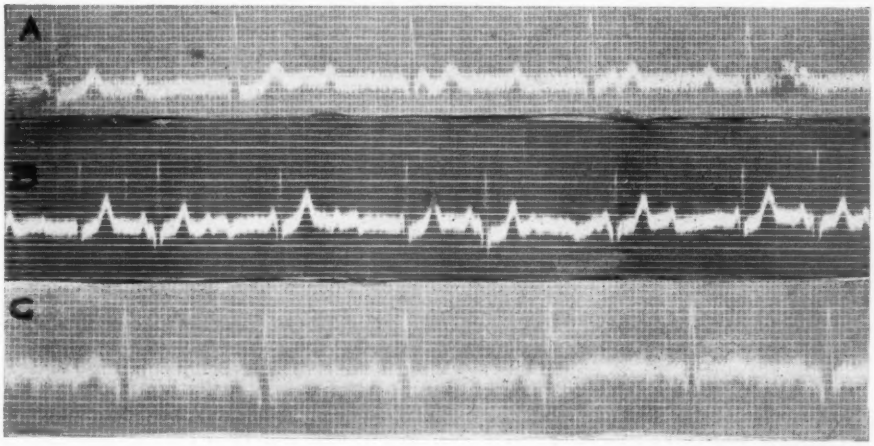

Fig. 1.—Lead II of electrocardiograms of patient H. W.
A. Oct. 26, 1929. Complete Heart Block. Auricles 75, ventricles 41.
B. Oct. 14, 1930. Complete Heart Block. Auricles 75, ventricles 46. Coupled beats are present.
C. Oct. 7, 1931. Normal sinus control. Rate 65. P-R interval 0.24 sec.

Sinus rhythm has now become the more constant finding, but the delicate balance between the two mechanisms is indicated by the abnormally prolonged auriculo-ventricular conduction time and by the prompt return of idioventricular rhythm when physical activity is carried beyond certain bounds. Adams-Stokes attacks have been conspicuously absent.

The physiological factors which underlie such transitions in rhythm have been much discussed, particularly in regard to local circulatory changes within the heart affecting the blood supply of the nodes and the bundle. In one of these rare cases, reported some years ago with Pardee, the various mechanisms leading to block and independent ventricular action were discussed, and in a more recent paper, the rapid bombardment of an already diseased bundle by the impulses of auricular flutter (auricular rate 274, ventricular rate 44) was considered as the important factor in producing the complete block. In the present patient, it is of interest that he has never found his heart rate above 72 beats per minute; is it possible that any higher auricular rate at once brings such fatigue of the bundle as to precipitate total dissociation?

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PEMPHIGUS OF EYES, NARES, PHARYNX AND LARYNX.

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Pemphigus is rare. Defined briefly, it is a systemic disease characterized by successive crops of bullae which may involve skin, mucous membranes of respiratory and gastro-intestinal tracts, conjunctiva and viscera. An autopsy reported by Seal showed edema of pia mater, a hypostatic congestion of lungs, membranous enteritis and a hyperplasia of the spleen. Disseminated vesicles on the serous surfaces of liver, spleen and pleura have been observed.

ETIOLOGY: There are few etiological factors known. It occurs anywhere and at any season. Males and females of all ages and races are about equally affected. There seems to be a certain connection with atrophic nerve changes. It has been noticed in debilitated individuals whose resistance has been impaired but there is no definite proof that debility is the sole cause. The bacteriology of the lesions is not constant and is considered as a secondary invasion. All attempts at producing the disease secondarily have been unsuccessful.

MORBID ANATOMY: The areas involved will have the characteristic blebs though those of the mucous membranes rupture early, probably within a few minutes to an hour, due to their thin walls and the trauma associated with mastication and blowing of nose. These factors account for the rarity of seeing the typical lesion on the mucous membranes. After rupture of the bleb the mucous membrane has a "dead" appearance. Removal of this membrane shows beneath, an eroded area that is tender and bleeds easily.

SPECIAL SYMPTOMS: Involvement of mucous membranes may appear years before skin lesions. There is frequently a prickling or burning sensation and pain on swallowing, with a marked expectoration when the mouth is involved. With laryngeal involvement there is hoarseness, followed later by aphonia and dyspnea. With involvement of the alimentary canal, intestinal cramps and digestive disturbances are usual. Cicatrization may occur in the larynx and nares and always if the conjunctiva is involved.

PROGNOSIS: This is unfavorable if mucous membranes are involved. There may be periods of remission but death usually occurs between a few weeks and a few years. If the cornea is involved, blindness results.

TREATMENT: Treatment is of little avail. Supportive and palliative measures should be tried. Arsenic in any of its various forms may be used. Transfusions seem to help at times. Locally, methylene blue (solution of 20 grains to the ounce) silver nitrate and mercurochrome may be tried. Orthoform or anesthesin give temporary relief in throat involvement. Mild cleansing and disinfecting washes are indicated.

CASE REPORT: Miss J. L., age 47. Seen first on October 4, 1927, complaining of "ulcerated nose which has been bleeding for two months."

Family History: Father, mother and two brothers died of "heart trouble" and its complications. One brother died of pulmonary

and laryngeal tuberculosis. Otherwise history unimportant.

Past History: Had typhoid during her "teens," otherwise health always excellent.

Examination of right nares showed a round dark red area, about one-fourth inch in diameter, situated on the septum slightly posterior to Kiesselbach's area. There was a corresponding area on the opposite side of the septum. The Wassermann was negative.

I did not see her again until October, 1928, at which time she came in complaining that for a few days her "eyes had pained and burned." During the past year she had seen several physicians. Complete examinations had been made with negative results. The nares had been treated frequently with sprays and protein silver preparations. The involvement had extended until the entire septum, both sides, had a raw granulating appearance which bled easily but not freely. Examination of eyes showed what appeared to be a mild conjunctivitis.

The eye condition gradually grew worse. There was pain, photophobia and lacrimation. There appeared gray patches on the conjunctiva which healed slowly with cicatrization. Several Meibomian glands became infected and greatly swollen.

March 9, 1929, the nasal condition seemed much improved after several weeks of X-ray.

March 21, 1929, there was complaint of "sore throat." There was a tough post-nasal discharge and redness of the pharynx. The vision at this time was: right eye 20/40; left eye 20/200. This error of refraction was due to astigmatism chiefly, caused by contraction of the scar tissue of the conjunctiva. Vision corrected to normal with cylindrical lenses.

June 20, 1929, there was obliteration of retrotarsal folds with trichiasis of both lower lids.

July 15, 1929, there was entropion of lower lids. Several Meibomian glands in each lid were swollen. There was a lot of purulent discharge in each eye. The involvement of nasal septum was more severe. Antra were punctured and irrigated in Richmond, Va., with negative washings. The pharynx was acutely inflamed. There was some hoarseness.

December 20, 1929. The patient was wearing a trachea tube which was introduced at Johns Hopkins Hospital, in October, 1929, on account of laryngeal stenosis. The adhesions of the lids were loosened at that time. The physical examination was negative. The larynx was dilated at intervals following the tracheotomy but the patient could talk in a whisper only. Typical pemphigus bullae appeared on the skin about November, 1929. Serum from the blebs was given subcutaneously.

August 8, 1930. All lids were adherent to the cornea and there was difficulty in seeing. The nasal septum had a raw granular appearance on both sides. Pharynx had same appearance. There was a brownish-yellow post-nasal discharge. The larynx had been dilated several times during the preceding months. Tryparsamide, intravenously, in two grain doses was given weekly for twelve weeks during May and June, 1930.

August 26, 1930. The lids were adherent to a greater part of the cornea of each eye. There was no vision in the left. There was sufficient vision in the right for the patient to see how to walk around. The nasal condition seemed greatly improved. There were several small adhesions of right middle turbinate to septum. The pharynx had practically a normal appearance.

November 30, 1930, the laryngeal stenosis was dilated at the University of Virginia Hospital. The trachea and bronchi were normal. There were numerous adhesions in the nose. Physical examination was negative.

For the next nine months she was given a series of blood transfusions at the University of Virginia Hospital with "moderate success." An iridectomy was done on one eye.

September 27, 1931, she was seen by her family doctor. At that time she had a myocarditis. Death occurred the following day.

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XUM

SUBCUTANEOUS EMPHYSEMA COMPLICATING MEASLES BRONCHO-PNEUMONIA.

BASIL B. JONES, M. D., Richmond, Va.

Subcutaneous emphysema as a complication of measles bronchitis, or broncho-pneumonia, is a condition rare enough to justify reporting. I was unable to find a reference to this complication in measles in Nelson's Loose Leaf Medicine, and could find only a brief mention in Abt's Pediatrics. No specific cases were reported in the latter text and no references were cited.

Spontaneous subcutaneous emphysema can result from the escape of air from the alveoli or bronchi in two ways at least. As a result of cough a break may occur in a necrosed area and thus permit air to reach the peribronchial tissues. Through extension to the hilus and thence into the mediastinal space, the air may eventually appear beneath the skin of the neck, face, etc. The more direct route implies adhesions between the visceral and parietal pleurae with tears in both membranes. This type is generally accompanied by pneumothorax. Cases of subcutaneous emphysema have been described in the lung manifestations or complications of influenza and in some instances the first route mentioned above was followed by the escaping air.[1] Spontaneous rupture of the lung in bronchopneumonia with the subsequent development of pyopneumothorax while uncommon is yet much more often seen than subcutaneous emphysema. I personally have seen two such cases in infants. One of these cases, reported in detail,[2] resulted from the rupture of a small staphylococcus abscess which permitted the establishment of a fistula between the pleural space and a bronchiole. The great majority of spontaneous breaks through the pleura which permit the escape of air result from tuberculosis. So frequently does tuberculosis appear as the cause of such accidents, it must always be considered until it can be definitely eliminated.

Report of Case

Patient, R. L., 6 years old, was seen on April 17, 1931, in consultation with Dr. W. W. Dunn, who subsequently turned the case over to me for treatment.

F. H.—The father and mother are living and in good health. The mother once had an attack of pleurisy following influenza, and was ill six weeks. There was no other history suggestive of tuberculosis in the family. There are two other children in the family living and well.

P. H.—The patient was a full term baby. His birth was normal. He was breast fed for ten months. He walked and talked early. His health was good until he was two years old. At the age of two, he had influenza complicated by otitis media and pneumonia. He has never been as strong since this illness as he was before. During the past year, he had another attack of pneumonia, whooping cough, and influenza. He is usually somewhat underweight.

P. I.—When seen by me, he had been ill for several days with measles. The rash had been out for four days. A day previously, his physician had made a diagnosis of pneumonia of the left upper lobe. That night, the patient complained of severe pain in the left side of the chest and was very restless all night. During the night, the mother noticed the cheeks seemed swollen. The next morning she noticed swelling of the upper chest and neck.

Physical examination showed that he had a temperature of 104.6. The measles rash was beginning to fade. There was slight cyanosis of his skin. Both cheeks and the neck were swollen and crepitant. There was some extension of this crepitation over the upper part of the chest. The throat was red and clean. There was an apparent extension of the cardiac area of dullness to the right nipple. The left chest was hyperresonant throughout. The breath sounds were apparently slightly distant and of diminished intensity on the left, but some rales were heard throughout the left side. Sub-crepitant and crepitant rales were heard over the entire right side of chest. Examination otherwise was negative.

The patient was given a sedative cough mixture. The left side of the chest was strapped tightly with adhesive plaster and the patient was kept lying on the left side as much as possible. The mother was directed to change the child's position from time to time and to thump gently on the right side of his chest several times a day to drive air through the bronchial tubes.

For the next three days, there was not very much change in the child's condition, though he had recovered from the immediate shock incident to the rupture. During this time, there was little change in the physical signs in the

left chest, but the bronchitis or bronchopneumonia in the right lung practically cleared, and there was a gradual recession of the cardiac area of dullness towards the left. From the 20th to the 27th, the child steadily improved. The subcutaneous emphysema, however, extended down over the abdominal wall and air appeared in the right side of the scrotum. At this time, he was referred to the Johnston-Willis Hospital for further observation and X-ray examination.

A tuberculin test (1/10 mgm. of old tuberculin intradermally) performed on the 27th was negative. A similar test performed on the 1st of May was likewise negative. Blood examination revealed: Hgb. 64 per cent, R. C. 4,320,000, W. C. 7,600, P. 48, Sm.L. 47, L.L. 2, Eos. 3. Urine was negative.

Roentgen ray examination was reported as follows: "*Fluoroscopic examination* of chest reveals no evidence of any free fluid present. Excursion of diaphragm is equal on each side. *Stereoscopic examination:* Heart is slightly displaced to the left side. *Right lung:* Diaphragm curve normal. Hilum shadow shows some increase in glandular deposit which has a tendency to extend down to the base of the lung. Para-vertebral trunks show slight evidence of thickening along their course but no soft deposits. Extreme apex and periphery clear. *Left lung:* Diaphragm curve normal. There is evidence of a pleuro-pericardial adhesion at a point corresponding to the second rib anteriorly. The pleura along the mediastinal border shows some evidence of thickening. The peripheral pleura is clear cut in appearance. There is some glandular deposit around the hilum. Extreme apex and periphery of lung are clear. *Conclusions:* The findings would indicate that the heart is slightly displaced to the left side. The right lung shows evidence of some hilum thickening. The changes in the left lung show evidence of pleuro-pericardial adhesions corresponding to the second rib anteriorly. There is likewise evidence of some thickening of the mediastinal pleura which begins at the second rib anteriorly and extends down to the diaphragm."

From this examination and from the physical findings, it seems probable that this child had some adhesions between the visceral and parietal pleurae and that the tears occurred in that area. The physical examination suggested the presence of a pneumothorax which was rather promptly cured by the escape of some of the air into the mediastinal space and thence into the subcutaneous tissues and the absorption of the remainder.

When one considers the acute bronchitis and the probable pneumonia which was present at the time of the rupture, it would seem that this patient was very fortunate to escape an empyema or a mediastinal abscess.

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2618 *Grove Avenue.*

THE INCIDENCE OF PYELITIS IN THE FIRST TWO YEARS OF LIFE.*

ALGIE S. HURT, JR., M. D., Richmond, Va.

Much has been written recently concerning infection of the urinary tract in childhood, and the importance has been greatly emphasized[1, 3, 4, 8, 10, 11] of making complete urologic examinations in cases in which the infection persists in spite of intensive treatment carried out over a reasonable period of time. It has been pointed out by Campbell and Lyttle,[4] and other investigators, that in a large proportion of these refractory cases gross lesions of the urinary tract may account for the chronicity of the disease. Helmholz[8] has shown the necessity of making cultures of urine, and of not releasing patients from observation until the urine is negative bacteriologically.

There have been many estimates of the incidence of congenital anomalies of the urinary tract, and of infection of the urinary tract in infancy and childhood. A comparison between the two should be interesting.

Bugbee and Wollstein,[3] in 1924, reported a series of 4,903 necropsies on children in 2.3 per cent of which anomalies of the urinary tract were found. In 1929, Bigler[2] reported twenty cases (13 per cent) with urinary anomalies, in a series of 153 consecutive necropsies on children. Campbell and Lyttle,[4] in a series of 2,420 pediatric cases in which necropsy was done, found 2 per cent with gross evidence of ureteral obstruction. In a recent paper[9], I reported 101 consecutive necropsies on infants aged two weeks and less, in which anomalies of the urinary tract were found in 5 per cent. Since two of these anomalies re-

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sulted in early death, it was felt that 3 per cent was significant when considering anomalies to be met with later in life.

There are few accurate data on the frequency of pyelitis in infancy and childhood. One reason for this is the difficulty involved in following a large number of children from birth through early childhood. Smith,[12] in 1918, estimated that pyelitis constituted about 1 per cent of all cases observed by pediatricians. Gittings,[6] in 1922, reported that of 734 patients with febrile diseases treated in the medical wards of the Philadelphia Children's Hospital, 1.6 per cent had pyelitis. Moore,[7] in 1926, quoted Goppert as saying that in his practice 1.2 per cent of cases were pyelitis. Forbes,[5], in 1929, reported that of 16,367 patients admitted to the Denver Children's Hospital, a diagnosis of pyelitis was made in 0.53 per cent.

The present report is based on the records of a group of children born at St. Mary's Hospital, Rochester, Minn., during 1922 to 1928, inclusive. One thousand seven hundred and eighty infants were born alive, excluding those who died within a few days after birth. Of these, 733 had follow-up care by the Department of Pediatrics of The Mayo Clinic for the greater part of two years; 384 were boys and 389 were girls. During the first two years of life, ten girls and one boy (1.4%) had pyelitis. All diagnoses were verified by positive cultures of urine. The condition of six children cleared readily under medical treatment. In one case the symptoms subsided but treatment was not continued to the point of making the cultures of urine negative. The records of another case were incomplete. In two cases abnormalities of the urinary tract were observed. A brief outline of their histories follows:

A boy had had difficulty in urinating since birth, always straining considerably. He was treated for pyelitis at the age of six months; culture of urine at that time showed innumerable colon bacilli. The straining and the infection persisted. At the age of two and a half years, examination revealed the presence of a pyriform tumor in the lower part of the abdomen. Suprapubic cystostomy was done, and the bladder was found markedly dilated. One month later, cystoscopic examination revealed obstruction of the prostatic urethra (stricture or flap). Atony of the bladder and ureteral dilatation were not present. The obstruction was relieved by dilatation of the urethra. However, the suprapubic wound failed to stay closed. The child died at the age of eight years. At post-mortem examination, cystitis, bilateral infected hydro-ureters and hydronephrosis, and generalized peritonitis were found.

A girl had had a large abdomen at birth, with an elastic mass in the right side of the abdomen at times. When the infant was six days old the urine contained many pus cells. Culture of the urine on the tenth day revealed the presence of many staphylococci and colon bacilli. When the child was one year old, cystoscopic examination revealed an atonic bladder, with 180 c.c. of residual urine. The infection persisted, but the child remained free from symptoms, having had no further febrile attacks from that time until she was last seen, at the age of seven years.

Another girl probably had an anomaly of the urinary tract, but this was not proved by urologic examination. She was first seen at the age of twenty-three months. At that time, the urine contained a large amount of pus, and culture of 0.5 c.c. revealed the presence of innumerable gram-negative bacilli. Treatment with methenamine and ammonium chloride was instituted, but was unsuccessful. Alkalinization, and alternate acidification and alkalinization were likewise without effect, the culture of urine remaining positive. At the age of two and a half years, the excretion of phenolsulphonephthalein was found to be 25 per cent. This test was repeated two days later, and was found to be the same. A roentgenogram of the region of the kidneys gave negative results. Cystoscopic examination was advised, but was not permitted by the parents. Since then she has had several bouts of fever, not associated with infection of the upper part of the respiratory tract. In 1930, when the child was six years old, innumerable gram-negative bacilli were found on culture of urine. This culture was taken when she had no fever, and no symptoms referable to the urinary tract. This illustrates convincingly the necessity of making cultures of urine in order to verify the disappearance of infection.

Comment

When compared with the percentages of anomalies of the urinary tract found by several observers at necropsy, 1.4 per cent seems a low incidence for pyelitis, especially when it is noted that in only two cases (0.26 per

cent) of the 773, proved anomalies of the urinary tract were present. It is conceivable that in some cases the anomalies do not cause enough trouble to require treatment, and that in others infection may develop after the second year of life. However, considering the fact that pyelitis is most frequent in children under two years of age, it is probable that a certain number of cases with anomalies is being overlooked by clinicians. This comparison serves to emphasize the importance of careful observation of all cases of infection of the urinary tract, and the necessity of a complete urologic examination of those in which infection recurs or in which the condition does not respond to intensive medical treatment. In order that renal injury may be prevented in cases of chronic urinary infection, medical treatment should not be persisted in beyond a reasonable length of time before resorting to urologic examination. Subsidence of fever and disappearance of pyuria do not mean that the infection has been cured. Treatment should be directed toward making the urine negative bacteriologically.

SUMMARY

The incidence of pyelitis in the first two years of life has been found to be 1.4 per cent in 773 children. Attention is called to the necessity of careful observation of cases of pyelitis which are refractory to treatment, in order to detect the presence of anomalies of the urinary tract.

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2618 *Grove Avenue.*

Woman's Auxiliary, to the Medical Society of Va.

PRESIDENT—*Mrs. J. Allison Hodges*, 5511 Cary Street Road, Richmond.
PRESIDENT-ELECT—*Mrs. W. P. McDowell*, Larchmont, Norfolk.
SECRETARY—*Mrs. James K. Hall*, 3011 Seminary Avenue, Richmond.
TREASURER—*Mrs. Reuben F. Simms*, 2034 Park Avenue, Richmond.

An Appeal to the Doctors.

This month I am making a special appeal to the doctors. We need your help in building up the Auxiliary to the Medical Society of Virginia, so please make your plans now to attend the Convention in Richmond, November 1st to 3rd, and be sure to bring your wives.

We expect to have some speakers of note and many interesting discussions. We hope the doctors and their wives will be so enthused that when they leave Richmond they will determine to organize an auxiliary in all communities where none exists. Our goal is to have at least one auxiliary in each Councilor District in Virginia. When this is accomplished, there will be a better understanding of what scientific medicine is trying to do to raise the standard of health in the state, and also a new bond of service and sympathy will be created between the doctor and the public.

For long years doctors have labored unceasingly to relieve suffering humanity, often without appreciation, and always without publicity or advertising, as the ethics of the profession forbid it, but now through the Woman's Auxiliary there is a perfectly legitimate way to give credit to organized medicine, where credit is due. "The Woman Power of the Nation" is today being recognized by all other professions and industries as a very valuable asset, and why not let the medical profession

have some benefit also. The women are more indebted to medicine for health and happiness than any other class of people, and they are glad to have the opportunity to serve the doctors.

How often our effort to organize an auxiliary is met with the objection that "the town is over-organized already, and there is nothing for the auxiliary to do." The "over-organized" town is the one in which the auxiliary is most needed, and finds its greatest opportunity, for often the most important work is done *through* other organizations, the auxiliary member suggesting and guiding the health work along lines approved by the Medical Society and Public Health Officer. Obviously then, the more organizations a member belongs to, the more personal contacts she has with other women and the wider her influence. A woman with tact and discretion can make the auxiliary a powerful factor for health education in her community. This should be the work of all members and not be left entirely to the Chairman of Public Relations. Any help the doctors give the Auxiliary I am sure will be returned a hundred fold.

To the Members.

Our new National President, Mrs. Freeman, in her address in New Orleans, after enumerating many assests of the Auxiliary, said, "The last and best I offer you is the great prize of happiness. Work in the Auxiliary makes for harmony in the home, and draws the doctor and his wife closer together in a more sympathetic understanding of his cares and responsibilities. We hear much of the inevitable sacrifice of the doctor's wife, only too well known to us all, but what of her rewards? Here again the auxiliary has the answer. Not only does it offer her unrivaled opportunities for the service of humanity, but by that very service, a new bond of sympathy and understanding is created between the doctor and his wife. Again and again do I find mention in the medical journals, from all parts of the country, of the new interest in their husband's work taken by auxiliary members, of their better understanding of the imperative demands made on a physician, of his greater responsibility as his brother's keeper because of his greater knowledge and skill. There is less jealousy of his profession, less resentment at its demands, greater harmony in the home, and the doctors are not slow in voicing their appreciation of this changing attitude."

I send you this message from historic old Buffalo Springs where I am spending my vacation. These Springs date back two centuries. Colonel William Byrd, the founder of Richmond, in his diary tells how he discovered "the Springs on Oct. 7th, 1728, and named it Buffalo from the frequent tokens we saw of that animal. We found the waters excellent, we perceived our appetites to mend and our slumbers to sweeten." From that day the waters have been famous for their health giving properties and through the years Buffalo has increased in popularity. I am glad there is still one place left in Virginia "far from the madding crowd," where one can find rest, quiet and relaxation. The rustling of the wind among the trees, the sweet plaintive notes of the whippowill at evening tide, and the mineral waters, all tend to soothe and heal our overstrained jangling nerves, and restore our serenity of spirit. So I advise you to come to Buffalo if you need a real rest.

Hoping to see every member of the Auxiliary at the Convention in Richmond this Fall.

Faithfully yours,

Mary G. Hodges.

Truth About Medicine

In addition to the articles enumerated in our letter of May 28th, the following have been accepted:
Eli Lilly & Co.
Ampoule Sodium Amytal 0.25 Gm. (3¾ grains)
Ampoule Sodium Amytal 0.5 Gm. (7½ grains)
Ampoule Sodium Amytal 1.0 Gm. (15½ grains)
Liver Extract No. 343, 110 Gm. bottle
Winthrop Chemical Co., Inc.
Ampules Luminal-Sodium (Powder) 5 grains
Capsules Luminal-Sodium, 5 grains
Luminal-Sodium Tablets, ¼ grain
Luminal-Sodium Tablets, ½ grain

New and Non-Official Remedies

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Suprarenin Solution 1:1,000.—Each 1 c.c. contains suprarenin bitartrate equivalent to suprarenin (New and Non-official Remedies, 1932, p. 187) 0.001 Gm. (1/65 grain). H. A. Metz Laboratories, Inc., New York.

Ampules Suprarenin Solution.—Each 1 c.c. contains suprarenin bitartrate equivalent to suprarenin (New and Non-official Remedies, 1932, p. 187), 0.001 Gm. (1/65 grain). H. A. Metz Laboratories, Inc., New York. (Jour. A. M. A., June 11, 1932, p. 2062).

Foods

The following products have been accepted by the Committee on Foods of the American Medical Association for inclusion in Accepted Foods:

Cocomalt (R. B. Davis Company, Hoboken, N. J.)—A powdered food for the preparation of table beverages; contains sucrose, skim milk, cocoa, malt extract, whole egg, vanillin flavoring and added vitamin D (irradiated ergosterol). Cocomalt is claimed to be especially intended for the preparation of table beverages with milk, and that it enhances the food value and the flavor of milk. One ounce of Cocomalt is claimed to contain from 40 to 45 vitamin D units (Steenbock).

SMACO (400) Maltose and Dextrins (Spray Dried) (S. M. A. Corporation, Cleveland).—This is essentially a mixture of approximately equal parts of maltose and dextrins. It is claimed to be especially prepared for use as a carbohydrate supplement for the modification of milk for infant feeding.

Recolac (Mead Johnson & Co., Evansville, Ind.)—A food for infants, containing soluble casein (potassium caseinate), lactalbumin, lactose, milk salts, dextrins, maltose, salts, extracts of yeast and wheat embryo, oleo, coconut and cod liver oils; contains vitamins A, B, D and G. It is claimed that Recolac reliquified to normal dilution of 1 ounce of powder+7 ounces of water forms a well-balanced food for infants who are deprived of breast milk, and may be used as a complemental or supplemental feeding.

SMACO (204) Concentrated Liquid Half-Skimmed Milk (Sterilized) (S. M. A. Corporation, Cleveland).—Evaporated half-skimmed milk containing half as much milk fat as ordinary evaporated milk. It is claimed to be intended especially for infant feeding for use wherever an evaporated partially skimmed milk is indicated.

Propaganda for Reform

Strychnine Poisoning.—Strychnine poisoning is rather frequent, and its occurrence is rendered dramatic by the dreadful agony of its course and the commonly fatal termination. Most of the sources of poisoning could be easily avoided especially in the tragic cases of infants. Moreover, the agony of the developed poisoning can be completely eliminated and nearly all fatalities could probably be prevented by proper treatment. The most prolific source of strychnine poisoning is chocolate or sugar coated household laxative or "tonic" pills. The dreadful slaughter from household "remedies" is the more regrettable since it has not been proved that the strychnine in laxative pills serves any useful purpose. Some restriction of the promiscuous sale of this violent poison in the guise of supposedly harmless household remedies is necessary and the board of trustees of the American Medical Association are considering the question of action along these lines. In the treatment of strychnine poisoning, the barbituric acid derivatives have opened a new chapter. They do not differ from the older hypnotics in principle but rather in the combination of high efficiency with relatively high safety, and by the fact that they may be administered intravenously in emergencies such as strychnine poisoning. (Jour. A. M. A., June 4, 1932, p. 1992).

Abortifacient Pastes.—"Interruptin," devised by a Berlin pharmacist, Heiser, and "Provocol," the formula of Dr. J. H. Leunbach, a gynecologist of Copenhagen, are exploited as simple means of performing therapeutic abortions. The Heiser product appears to be secret in composition. Leunbach has published the formula of his paste. This paste, known in Europe as Provocol, is now on the American market under the name "Leunbach Paste." It is claimed that the method can be readily used in the physician's office and the patient return to her home immediately without danger. The claim is made that within thirty-six hours after the injection the uterus generally will empty itself with a moderate amount of bleeding and with little pain, and in a manner that is even smoother than a spontaneous abortion. The preparation Leunbach Paste, now on the American market, is put out by the Vauka Chemical Works, Inc., of Newark, N. J. Foreign medical literature indicates that ideal results from the use of such pastes are obtainable in only about one-fourth of the cases. Within a comparatively short period of time there have recently appeared in German literature reports of twenty-five deaths resulting from the use of these abortifacient pastes. Physicians in this country are now receiving circulars extolling the alleged virtues of Leunbach Paste. The physician is told that the paste is "indicated in spontaneous abortions with retention of the entire, or parts, of the ovum." Such a statement may easily lead to fatalities, the pastes being most dangerous when used in cases where an abortion is in progress and bleeding is taking place. (Jour. A. M. A., June 11, 1932, p. 2155).

Examination of Ethylene for Anesthesia.—V.—When ethylene first came on the market, the Council on Pharmacy and Chemistry requested the A. M. A. Chemical Laboratory to establish standards for this substance. Not only has the Laboratory established suitable standards but, because of the non-official status of the gas, frequent examinations have been made of the market supply of ethylene. Recently there was submitted to the Council a new brand of ethylene. It was deemed advisable at the same time this product was examined chemically to purchase market supplies of the other products described in New and Non-official Remedies. Accordingly, tanks of ethylene for anesthesia were purchased both in Chicago and in Columbus, Ohio. The following brands were examined by the A. M. A. Chemical Laboratory and found to comply in all respects with requirements given in New and Non-official Remedies for ethylene for anesthesia: Cheney, C. L. P., Lennox, Puritan, Walco. (Jour. A. M. A., June 18, 1932, p. 2209).

Medicated Corn Plasters.—The Council on Pharmacy and Chemistry reports that so-called medicated corn plasters which are offered for general use by the public contain in general a caustic agent such as salicylic acid as their potent component. The Council feels that the indiscriminate use of corn plasters containing salicylic acid by the public is not without some danger. The public is too prone to consider any lesion on the foot, especially if it is somewhat indurated, as a corn. All types of pathologic conditions on the feet should be seen by the physician and the treatment for these conditions directed by the physician. The Council considers medicated corn plasters to have the status of a drug the indiscriminate and ill-advised use of which by the public should not be encouraged. (Jour. A. M. A., June 18, 1932, p. 2209).

Annual Meeting of the Council on Pharmacy and Chemistry.—The following were among the subjects considered at the annual meeting: The Council instructed the committee in charge of that part of the Intern's Handbook which concerns the Council, to proceed with the preparation of the text for early publication. It was decided that in general the products listed in the chapter on Medicinal Foods in New and Non-official Remedies be transferred to

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the Committee on Foods. It was decided to hold iodized table salt suitable for use by the public on its own initiative on condition that it is made to contain a safe proportion of iodine and that iodized salt with a higher percentage of iodine be considered to have the status of a drug. It was decided that although claims for vitamin A as an aid to the establishment of general resistance to infection might be recognized, the evidence does not permit claims for "anti-infective" value in specific conditions. The Council decided that corn plasters and corn cures containing salicylic acid must be held to be therapeutic agents and that their indiscriminate use is not safe. The Council decided to revise the description of Antivenin (Nearctic Crotalidae) in accord with the work of Jackson. It was decided to continue the policy of considering each liver extract individually, so that each manufacturer might be given opportunity to present evidence for the safety of the intravenous administration of his product. It was decided that an investigation of the present status of bacillus acidophilus therapy be carried out. The Council decided to ask the Bureau of Investigation to give further publicity to the hazards from the use of cinchophen. It was decided to revise the New and Non-official Remedies article "Sulpharsphenamine" to emphasize the dangers and limitations of sulpharsphenamine therapy. (Jour. A. M. A., April 16, 1932, p. 1374.)

Mail Order Urine Tests.—The American Medical Association Chemical Laboratory has published a report relative to a urine examining service conducted by Montgomery Ward & Co. Various concerns have endeavored to exploit this plan commercially during the last ten years, but it is, however, a new departure for a mail order organization to undertake such a service. Every physician knows that a mere examination of the urine without a physical examination and without a careful study of the patient in person may be more misleading than valuable, so that even if the urine service were perfect, its utility would still be problematic. When, however, the service is of the character that this one seems to have, it becomes a menace to the user. Since the article on the Univeral Research Laboratories was prepared evidence has become available that the company is actually owned by Warner's Renowned Remedies, a firm which manufactures a goiter remedy, and which deals largely with department stores and mail order houses. (Jour. A. M. A., April 30, 1932, p. 1566.)

Norman Baker vs. The American Medical Association.—Norman Baker, of Muscatine, Iowa, who headed a number of mercantile enterprises, including the ownership of a radio broadcasting station and an alleged cancer cure, was dealt with, editorially, in the Journal A. M. A., of April 12 and April 19, 1930, and in Hygeia for May, 1930. As a result of these publications, Baker brought suit for libel against the American Medical Association, asking $500,000 in damages. This case came to trial in the Federal district court in Davenport, Iowa; the trial opened on February 9th and continued until March 3rd, covering a period of nearly four weeks. On March 3rd, the jury returned a verdit for the American Medical Association. Baker had two (and, for a short time, three) alleged treatments for cancer that were being given at Muscatine in the building that was known as the "Baker Hospital." They were (1) a treatment for "external" cancer, an arsenic powder exploited by Harry M. Hoxsey, and (2) the injection treatment for "internal" cancers of one Charles O. Ozias, of Kansas City. Baker broadcast over his radio station that he was going to investigate a cure for cancer (the Ozias "treatment") and that he "wanted five men or women from any part of the United States or Canada who were suffering from cancer to consent to become a test patient for this treatment. These "test cases" were widely advertised by Baker. Here it may be interpolated that all five of the patients were dead for some time before Baker ceased advertising that "Cancer Is Conquered." Before closing its case, the American Medical Association put in evidence between twenty-five and thirty death certificates of patients who died at the Baker Institute. The Association also submitted seventeen death certificates of Hoxsey victims. During the course of the trial it was brought out that the State of Iowa had enjoined Baker from practicing medicine without a license and that the Federal Radio Commission had revoked Baker's broadcasting license, because it found that his operation of the station was inimical to the public interests. (Jour. A. M. A., March 19, 1932, p. 1012.)

General Decisions of the Committee on Foods.—Chocolate and Cocoa Products: Special recommendations for their use by children are not permissible for foods consisting largely of chocolate or cocoa which contain considerable quantities of theobromine and caffeine. Declaration of Added Salt or Sugar in Sieved Vegetables or Fruits Intended for Infant or Invalid Feeding or For Special Diets: These should be given appropriate and prominent declaration. Gelatin: There is no satisfactory evidence that gelatin increases the digestibility of milk or milk products. "Health Food" Claims: The term "health food" and equivalent claims are misleading. Mastication Claims: Mastication is not an aid to health of teeth and gums. Fruit Juices: Whether liquid, frozen or dried, they shall be prepared and packed to preserve their natural vitamin values. Sulphur Dioxide: Small quantities are permissible in fruit products specially prepared for infants or children. Tonic Claims: The term "tonic" or its inflected forms are not permissible in food advertising. "Sterile," "Sterilized" and "Sterilization": These terms shall be used in food advertising in their correct scientific significance. Vitamin and Mineral Content of Fruits and Vegetables: Sieved fruits or vegetables prepared for the feeding of infants and children shall retain in the highest degree possible these constituents. Vitamin Claims in Food Advertising: Indefinite or general vitamin claims are misleading. Vitamin Content of Tomato Juice: It shall retain in the highest degree possible the vitamin content of the raw juice. Vitamin Fortification of Foods: Tentatively no objection is taken to reasonable fortification. (Jour. A. M. A., March 26, 1932, p. 1087.)

JUST LITTLE THINGS

The little things we give away,
The little deeds we do each day,
The little things we smile and say,
The little games we sometimes play—
All added to the good we do,
Bring joy and cheer to me and you,
With sunshine all the way.

—*Selected.*

Book Announcements

New and Non-official Remedies, 1932, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of The American Medical Association on January 1, 1932. Cloth. Price, postpaid, $1.50. pp. 492, lvi. Chicago: American Medical Association.

The recognition of a preparation for inclusion in this book singles it out from the host of new products of the pharmaceutical manufacturers as being a worthwhile addition to the existing armamentarium of the practicing physician. To be thus distinguished it must be shown, under the impartial scrutiny of the carefully chosen group which is the Council on Pharmacy and Chemistry, that it has acceptable evidence of therapeutic usefulness and that it is marketed in accordance with the honesty and straightforwardness envisaged by the excellent Rules which have been the outgrowth of the Council's quarter century experience in appraising the merits of new drugs.

In accordance with its custom of keeping the annual editions of New and Nonofficial Remedies in the forefront of current medical thought, the Council offers in this volume the newly revised articles: Barbital and Barbital Compounds; Fibrin Ferments and Thromboplastic Substances; Liver and Stomach Preparations; Mercury and Mercury Compounds; and Ovary. Perhaps the most noteworthy new preparations admitted are: nupercaine-Ciba, a local anesthetic; pentobarbital sodium, a barbituric acid derivative; and iopax, a new preparation for roentgenologic use. All of the ovary preparations formerly described are omitted and none of the new standardized preparations are described, although the names Theelin and Theelol are recognized in the revised general article. Another change of importance is the classification of articles formerly listed as "Exempted" under the heading "Accepted but Not Described." There is the usual excellent index and the augmented Index to Proprietaries Not Included in N. N. R.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1931. Cloth. Price, $1.00. pp. 100. Chicago: American Medical Association.

This volume contains the collected reports of the action of the Council on Pharmacy and Chemistry on all products which have been found unacceptable or which have been omitted from New and Nonofficial Remedies during the past year. It contains also the special reports authorized by the Council during the year and preliminary reports on articles which show promise but which are not yet ready for admission to New and Nonofficial Remedies nor suitable for general use by the medical profession.

The preliminary reports on Nucleotide K 96, a preparation of pentose nucleotides which has shown promise in the treatment of leukopenia, and on Carbarsone, p-carbamino-phenyl arsonic acid, proposed for use in amebiasis but needing further confirmatory evidence of value, are both timely and interesting.

Perhaps the most noteworthy are the special reports, The Intravenous Use of Barbital Compounds and The Average Optimum Dosage of Cod Liver Oil. The former gives the Council's considered verdict on the dangers and limitations of the use of barbitals intravenously and the latter gives the result arrived at from a questionnaire sent to leading pediatricians.

A Survey of Prehistoric Sites in the Region of Flagstaff, Arizona. By HAROLD S. COLTON. Smithsonian Institution. Bureau of American Ethnology. Bulletin 104. United States Government Printing Office. Washington, D. C. 1932. Octavo of 68 pages. Illustrated. Paper. For sale by the Superintendent of Documents, Washington, D. C. Price, 30 cents.

Menominee Music. By FRANCES DENSMORE. Smithsonian Institution. Bureau of American Ethnology. Bulletin 102. United States Government Printing Office. Washington, D. C. 1932. Octavo of 230 pages. Illustrated. Paper. For sale by the Superintendents of Documents, Washington, D. C. Price, 80 cents.

Hospital Service in the United States. 1932. The 1931 Census of Hospitals. Eleventh Presentation of Hospital Data by the Council on Medical Education and Hospitals of the American Medical Association. Reprinted from the Hospital Number of the *Journal of the American Medical Association.* June 11, 1932. Price, 50 cents.

As we grow older, and the shadows begin to lengthen, and the leaves which seemed so thick in youth above our heads grow thin and show the sky beyond, and as those in the ranks in front drop away, and we come in sight, as we all must, of the eternal riflepits beyond, a man begins to feel that among the really precious things of life, more lasting and more substantial than many of the objects of ambition here, is the love of those he loves and the friendship of those whose friendship he prizes.—*Henry Cabot Lodge.*

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Editorial

The Role of the Streptococci.

A justification for an editorial comment on a subject as large and complex and as unsettled, as that suggested in this caption, is in the possibility that the busy practitioner may find therein some review of an important subject in many medical problems. As the consideration of arthritis brings up the question of its possible etiology and relationship to streptococcus action, it may be refreshing to note what important bacteriologists write on the role of the streptocci in general. Hans Zinsser in the 1928 edition, Textbook of Bacteriology, serves as an authority for such comments.

The streptococci that give rise to disease processes in animals and in man, because of their frequent association with suppurative inflammations, are classified in a group as streptococcus pyogenes. This group of streptococci are, further, divided into the hemolyticus or hemolyzing variety and the viridans or non-hemolyzing variety.

The streptococcus hemolyticus is the more virulent group and forms an important source of serious acute diseases in man. Man's resistance to these micro-organisms is, however, an important factor in the degree and violence of the pathological processes set up. For instance, a superficial cutaneous infection may be mild in effect and resolve itself into localized abscesses. Under conditions of lowered vitality or resistance, such infections by this organism may be followed by rapidly spreading edema, lymphangitis, and severe systemic symptoms; danger to the life of the patient may be serious, if not mortal. Likewise suppuration of the bone by streptococci makes a severe osteomyelitis. When such infection occurs in the mastoid bone, fatal meningitis often occurs. Meningitis of streptococcic origin, although rare, may be seen in bronchopneumonia and influenza. Then, an erysipelas streptococcus hemolyticus, sometimes called streptococcus erysipelatis, locates in the crevices of tissues and lymph channels of the skin. In what one knows as Ludwig's angina, streptococcus hemolyticus produces a violent acute inflammatory process of areolar tissue of the submaxillary region of the neck. Most frequently in general practice, physicians have to deal with this micro-organism, streptococcus hemolyticus, in infection of abrasions, cuts and wounds. Not infrequently, physicians, surgeons, pathologists, and medical students have been seriously infected through accidental puncture wounds in dressing infected wounds, in operating, in making post mortem examinations and work in the dissecting halls. A mere prick of the finger, a break in the skin may be the point of infection; looking very inconsequential at the time, it may culminate in general infection.

Physicians in obstetrical practice have ever in mind the danger of puerperal sepsis. This most dangerous of infections is caused by streptococcus hemolyticus, although streptococcus viridans is also a less tragic actor in this malady.

In the mouth and throat of normal people, hemolytic streptococci reside and in this con-

nection, one finds severe forms of follicular tonsillitis, with its high temperature and severe symptoms of swelling of the tissues of the throat and neck. Streptococcus throat infection may bring swift and malignant symptoms and death. So in scarlet fever, streptococcus hemolyticus produces its severe throat angina, its rash, its cardiac and nephritic complications. In smallpox, diphtheria, measles, and influenza, blood cultures have revealed streptococcus hemolyticus as secondary invaders. In the World War among soldiers, streptococcus bronchopneumonia acted in epidemic fashion and proportions. Then too, in epidemic sore throat, due to milk infection, streptococcus plays an etiologic part—probably originating in mastitis of dairy cows.

Now, streptococcus viridans, so called green streptococcus, is non-hemolytic and produces less severe and more subacute lesions. This organism is frequently associated with tooth infections, middle ear disease, and infections of the accessory sinuses of the nose and sometimes found in crypts of chronic tonsillar infection. It is streptococcus viridans that is associated with subacute vegetative endocarditis. In vegetative growths on the valves, usually mitral, sometimes aortic, this organism produces its pathologic process. Streptococcus viridans can be readily cultivated from the blood stream because there it remains for weeks and months. It is a slow process; the patient's resistance may remain well sustained for a long time, but after months, resistance gradually wears down and death ensues. From such vegetations, emboli may be passed by the blood currents to the brain vessels, the kidneys or elsewhere.

Streptococcus viridans and rheumatism are tied together through much research work and clinical inquiry. Hans Zinsser's consideration in his 1928 edition says, "enormous amount of rather confusing work has been done upon the etiology of rheumatism from this point of view." He points out Poynton and Paine's work. Zinnser describes briefly Rosenow's claims; he points out the evidence in which Swift and Kinsella fail to obtain a verification of Rosenow's findings. Yet, says this bacteriologist, the association of acute rheumatism with streptococcus throat infection and valvular heart disease with rheumatism are so clinically related by experience that their association cannot be lightly dismissed.

Finally, the opinion is given that certain varieties of rheumatism are narrowed down to two etiologic possibilities, namely (1) "that actual injury of the joint is caused by a toxic factor something like the Dick poison which penetrates to the synovia; (2) that the body becomes allergic to the streptococcus materials and that a localized allergic reaction in the joints accounts for the lesions." In both a necessary concomitant disturbance of capillary circulation occurs.

Intravenous Vaccine in Chronic Arthritis.

Chronic arthritis is a disease more or less present in the practice of every general practitioner. The disease is one of world wide interest. Its deforming and crippling effects have affected the human race through the ages. Attacked in joint mechanisms of the body, the patient becomes handicapped and deformed. Normal locomotion and movements of the body are abridged. When effort is made to move, pain and distress are experienced. Deformity and distortion of articulating bone surfaces bring the body to a state of semi-invalidism and ill health. To prevent such a terminal catastrophy and to thwart such laming and handicapping symptoms in arthritis has been one of the master problems of medical inquiry through the years.

From the days of suggested relation of oral focal infections to systemic rheumatic symptoms, to the present time, a large amount of experimental work has been done and publication of such work and clinical observations has been made on the treatment of arthritis. Our readers, therefore, may add to their reading on this subject by noting what Clawson and Wetherby* report as their experience in experimental considerations and in the therapeutic results obtained in patients with chronic arthritis by the use of an intravenous vaccine. One in practice, both urban and rural, may attend with peculiar interest a report of this sort that is given the profession, it being submitted after subjecting 301 patients to this therapy. In addition to the summary of their work, the authors cite a group of papers and publications as reference, on which their discussion is based. In the list, one finds well known authors who have contributed largely to the general knowledge of the etiology and treatment of arthritis. We find there Billings, Rosenow, Swift, Baer, Poynton and Paine, and Cecil and other workers.

Clawson and Wetherby draw attention to

*Annals of Internal Medicine, June, 1932, page 1447.

the fact that positive streptococcic cultures have been obtained by many workers (cited). The average percentage of positive streptococcic cultures were as follows: blood 35 per cent, joint fluids 35 per cent, joint tissues 44 per cent, lymph nodes 61 per cent, and subsutaneous nodules 72 per cent. Of 1,297 cultures, 520 (40 per cent) were positive for streptococci. Later workers, say these authors, have raised these percentages. Streptococcus viridans, in the main, is the most constant organism, although atypical hemolytic streptococci were found.

Pathologic processes described were cellular reactions in the joint capsules and membranes. Polyblastic changes of the tissues of the joints like those described by Swift in joint lesions of acute rheumatic fever were noted. The authors observed subcutaneous nodules in 30 per cent of a series of 300 cases of chronic arthritis. They felt that bacteriological, immunological and pathological evidence obtained tended to support the thesis of the etiologic relationship of the streptococcus to chronic arthritis.

The authors attempted to see what could be done in relieving and curing chronic arthritis by vaccination. They set up three necessary requirements in vaccination for chronic arthritis: (1) not to make the patient hypersensitive to the protein in the vaccine; (2) to desensitize the patients who are already hypersensitive and (3) to bring about a high degree of protective immunity. A series of animal experiments in rabbits were performed. These lead to the conclusion that intravenous injections of streptococci met with the preceding requirements, but that subcutaneous injections did not. These workers conclude, that "streptococcic desensitization and protection are species specific but not type specific and that they are not brought about by a non-specific protein reaction." They found that about 80 per cent of patients with chronic arthritis, who received five or more intravenous injections of a streptococcic vaccine, showed definite clinical improvement and that the results obtained "seem to justify the further study of such treatment."

Vitamin B.

The last word has not been said on the subject of vitamins in human food. Much has been learned, however, within the last decade, that offers fair promise of increasing popular knowledge on the growth, conformation, good health, vitality, strength, endurance, stamina, and like "ponderables" and "imponderables" of the human body.

Blights in the body growth and health of the people of the earth have marked through human history the deficiency of vitamins in the food. Dwarfed growth, malformed skeletal structure, distortion of the muscle structures of the body, doubtless unresisted spread of plagues, epidemics and other ghastly-like stigma, have haunted the evolution of the human body in the ages of the past, in every land and country—brought about, in no inconsiderable degree, by the deficiency of the food factors in daily rations. May doctors not see this between the lines as they peruse the story of diseases of man—such as rickets in babies and youth, the pellagrous blight of natives of northern Italy and our Souther states; in the beriberi of the yellow races in the East; and the scurvy of the weakened, anemic, hemorrhagic, spongy-gummed mariner sailing the seven seas of the past.

Practitioner must come to know that the need of a knowledge of vitamins in the diet of the young growing body, as well as the mature, has arrived. By a failure to grasp the knowledge as far as obtained as a working basis in daily practice, one will be unprepared to deal properly with the ever increasing problems of diet and disease of present-day practice. This urgent need does not rest alone upon the pediatrician in handling his little patients with rickets and undergrowth but it rests upon the whole profession. If one group of physicians should know this subject better than another, one should name the general practitioner in the country and cities. So, it is under the appeal of this subject that editorial comment is again brought to our readers to note with interest the series of articles now appearing under the supervision of an authorized Committee of the American Medical Association in the *Journal* of that Association.

Last month in these columns, attention was given vitamin A, and now we wish briefly to generalize on the vitamin B as a factor of human diet, using a special article by the Committee, vol. 98, no. 26, page 2282, as a reference for comment.

Seen and unseen avitaminosis in the human body requires comment. Obvious signs of deficiency are easily recognized. Disease entities such as rickets, scurvy, pellagra, and beriberi,

as they advance to their terminal stages of destruction, are, of course, recognized, and active therapeutic measures administered to check such maladies. But much avitaminosis exists unrecognized in the patients and clientele of every practitioner. This is true in the sick in the homes and hospitals and in the undernourished population of the country.

Anorexia appears to have a relationship to vitamin B. Loss of appetite, a loss of the normal urge to take food daily in sufficient quantity to carry on body-building and body-strength is always important. But in the marasmic baby, in the poorly nourished and emaciated patient, such a loss of function means a great deal. Cowgill, for illustration, gives Newburgh's experience "in increasing the voluntary food intake of a mentally incompetent young woman from about 400 to approximately 2,000 calories a day by the simple expedient of administration of vitamin B." It seems obvious that all conditions evidencing signs of malnutrition and undergrowth, and such general clinical signs, may be placed in the category of avitaminosis and may be thought of as needing vitamin B in particular.

Restriction of growth is another feature brought out by Cowgill. The place of vitamin A and calcium and vitamin B is difficult to assign in this feature of malformation, but it is a general opinion in the growth of children that vitamin B plays an important part. As growth of the body proceeds, the adequate intake of the vitamin B in the diet of the young increases in importance.

The foods and sources of vitamin B should be known to every practitioner. Tables and lists containing this information are at hand. In general, one may remember that cereals of wheat germ and yeast serve as excellent sources of vitamin B. Among meats, liver, kidney, brain and muscle are important sources of vitamin B; in vegetables, tomatoes, fresh spinach, cabbage and legumes, while oranges, lemon juice, onions, lettuce and cauliflower have vitamin B to a lesser degree. In the yolk of egg, milk and in special concentrates of vitamin B, physicians may find a source of this anti-neuritic vitamin that may be needed in the patients and in the school children and in the underfed marasmic baby.

Department of Clinical Education
OF THE MEDICAL SOCIETY OF VIRGINIA

New Courses in Prenatal and Postnatal Care.

The Northampton and Accomac County Medical Societies, at meetings held separately on July 6th, have voted to approve a two-weeks course on the Eastern Shore, August 8th to 19th, under the instruction of Dr. Maxwell E. Lapham, Field Clinician of the Joint Committee on Prenatal and Postnatal Instruction. The course will begin in the Northampton-Accomac Memorial Hospital at Nassawadox.

The number required for the organization of the class has been secured by the enrollment of the following physicians: In Accomac County, Drs. C. E. Critcher, O. R. Fletcher, D. L. LeKites, A. A. Matthews, B. N. Mears, John W. Robertson, R. J. White and A. F. Wood; in Northampton, Drs. S. K. Ames, J. G. Goode and J. M. Lynch.

More than a dozen other physicians have expressed their interest in the course and an enrollment of about twenty is expected.

The full time of the Field Clinician will be devoted to the work of post-graduate instruction in prenatal and postnatal care in any ways that are desired. His services are offered to physicians for the examination of patients in their own offices as a means of emphasizing the instruction in a practical way. He will see patients only upon the recommendation of members of the medical societies and communicate with them only through the patient's physician. The Joint Committee invites members of the class to make free use of all the time and skill Dr. Lapham can put at their disposal.

Increasing use of Dr. Lapham's out-of-class hours in conference with physicians is taking place in the first circuit of the course, which comes to an end on August 5th. The enrollment for these five centers has increased to seventy-nine through the addition, since the report of last month, of Dr. R. L. Taliaferro, Madison Mills, in the Charlottesville class; Dr. Walter Williams, Brookneal, in the Lynch-

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burg class; Dr. W. A. Jeffress, Fairfield, in the Lexington class; and Dr. M. T. Vaden. Buena Vista, in the Lexington class.

The attendance has maintained the same high rate as in the beginning and favorable comments have in no degree diminished.

Proceedings of Societies

Virginia State Board of Medical Exominers.

There were only two failures in the 113 applicants to practice medicine in Virginia who took the examination given by the State Board at its June, 1932, session. Eighteen doctors were granted certificates by recriprocity.

Following is a list of the succesesful applicants:

Dr. Lester W. Archambeau, Washington, D. C.
Dr. Nathaniel T. Ballou, Jr., Richmond, Va.
Dr. Henry Louis Bastien, Washington, D. C.
Dr. Milton Hamlin Bland, Crewe, Va.
Dr. Nathan Bloom, Richmond, Va.
Dr. Benjamin D. Bosworth, Portsmouth, Va.
Dr. Samuel Allen Brown, Washington, D. C.
Dr. Holmes Gantt Byrd, Richmond, Va.
Dr. James Lawson Cabaniss, Bedford, Va.
Dr. Hawes Campbell, Jr., Richmond, Va.
Dr. Jack Leon Cantor, Petersburg, Va.
Dr. Willard Cardwell, Richmond, Va.
Dr. Hill Carter, III, Ashland, Va.
Dr. Stephen R. Casagrande, Richmond, Va.
Dr. Richard Colbert Cecil, Bramwell, W. Va.
Dr. Austin Brockenbrough Chinn, Warsaw, Va.
Dr. Thomas S. Claiborne, Greenwood, Miss.
Dr. Robert R. Coleman, Norfolk, Va.
Dr. Harold B. Damron, Clintwood, Va.
Dr. Frank D. Daniel, University, Va.
Dr. Hal Davis, Roanoke, Va.
Dr. J. Walter Davis, Jr., Hampton, Va.
Dr. Martin D. Delaney, Jr., Alexandria, Va.
Dr. George H. Derieux, Jr., University, Va.
Dr. Walter A. Derrick, Pulaski, Va.
Dr. Murray Dick, Newport News, Va.
Dr. Patrick H. Drewry, Jr., Petersburg, Va.
Dr. H. Rolfe DuPuy, Washington, D. C.
Dr. Charles A. Easley, Jr., Chatham, Va.
Dr. Joseph A. Eason, Richmond, Va.
Dr. Henry M. Escue, Roanoke, Va.
Dr. Perfecto A. Espejo, Washington, D. C.
Dr. Thomas G. Faison, Raleigh, N. C.
Dr. Rodolfo F. Fasoli, Richmond, Va.
Dr. Frederick L. Finch, Jr., Richmond, Va.
Dr. Rodolph H. Fowlkes, Chatham, Va.
Dr. Clarence D. Freeman, Jr., Portsmouth, Va.
Dr. Oscar H. Fulcher, Welch, W. Va.
Dr. Chase Gray Gage, Cambridge Springs, Va.
Dr. Earle C. Gates, Highland Springs, Va.
Dr. Alexander G. Gilliam, University, Va.
Dr. James Massie Gleason, Richmond, Va.
Dr. Cornelius E. Gorman, Lynchburg, Va.
Dr. Emanuel Greenspon, Newport News, Va.
Dr. John William Griffis, Natural Bridge, Va.
Dr. Randolph D. Grinnan, Jr., Norfolk, Va.
Dr. Robert E. Harris, Richmond, Va.
Dr. John Hartwell Harrison, Danville, Va.
Dr. James B. Hawes, University, Va.
Dr. Richard S. Herring, Richmond, Va.
Dr. Robert B. Hightower, University, Va.
Dr. Robert B. Hillsman, Teaneck, N. J.
Dr. Leland F. Hobbs, University, Va.
Dr. Robert T. Humphries, Culpeper, Va.
Dr. William D. Jarman, Farmville, Va.
Dr. Lewis E. Jarrett, Richmond, Va.
Dr. Robert W. Johnson, Lynchburg, Va.
Dr. Jean B. Jones, Petersburg, Va.
Dr. Edgar W. Kirby, Jr., Portsmouth, Va.
Dr. Allen W. Lane, Tarboro, N. C.
Dr. Winston T. LaNeave, Jr., Richmond, Va.
Dr. Herman Lenowitz, Shawsville, Va.
Dr. Sydney Levy, Richmond, Va.
Dr. Robert F. Martin, Faber, Va.
Dr. Everette W. McCauley, Richmond, Va.
Dr. John C. McCluer, Jr., University, Va.
Dr. Melvin W. McGehee, Orange, N. J.
Dr. Andrew N. McLaughlin, Richmond, Va.
Dr. Thomas S. Meade, Philadelphia, Pa.
Dr. Robert S. Millen, Westbury, N. Y.
Dr. John H. Miller, Richmond, Va.
Dr. Phillip L. Miller, Norfolk, Va.
Dr. Walter L. Nalls, Alexandria, Va.
Dr. Beverly W. Nash, Baynesville, Va.
Dr. Charles M. Nelson, University, Va.
Dr. Alfred M. Palmer, McLean, Va.
Dr. Ralph W. Pence, Ashland, Va.
Dr. J. Randolph Perdue, University, Va.
Dr. Walter A. Porter, Roanoke, Va.
Dr. Stanley H. Powell, Portsmouth, Va.
Dr. Younger L. Power, Hazleton, Pa.
Dr. Albert T. Repass, Richmond, Va.
Dr. John E. Roberts, University, Va.
Dr. Euston S. Robertson, Alcoma, Va.
Dr. William M. Robinson, Richmond, Va.
Dr. Elizabeth L. Saunders, Charlottesville, Va.
Dr. Wade H. Saunders, Roanoke, Va.
Dr. Charles Neill Scott, Richmond, Va.
Dr. Robert Scully, Teaneck, N. J.
Dr. Lacy L. Shamburger, Richmond, Va.
Dr. Francis T. Sharpe, Washington, D. C.
Dr. Edward S. Silvera, Jr., Washington, D. C.
Dr. John P. Snead, Jr., Charlottesville, Va.
Dr. Francis A. Snidow, University, Va.
Dr. Wilson T. Sowder, Rocky Mount, Va.
Dr. Hugh Otto Staley, University, Va.
Dr. Thomas E. Stanley, Beaverdam, Va.
Dr. Charles T. St. Clair, Jr., Bluefield, W. Va.
Dr. Frank A. Strickler, Bridgewater, Va.
Dr. George T. Tanner, Brightwood, Va.
Dr. Lee Barnhardt Todd, Richmond, Va.
Dr. George D. Vermilya, Clifton Forge, Va.
Dr. Robert J. Walker, Jr., Tarboro, N. C.
Dr. Karl K. Wallace, Farmville, Va.
Dr. Delmar F. Weaver, Orange, Va.
Dr. William L. Weaver, Front Royal, Va.
Dr. Hugh G. Whitehead, Jr., Norfolk, Va.
Dr. William D. Wilkins, Birmingham, Ala.
Dr. James M. Winkfield, Richmond, Va.
Dr. Mumford Radford Yates, University, Va.
Dr. Joseph E. Young, Jr., Greensboro, N. C.

The Northampton County Medical Society

Met on July 6th, at Eastville, Va., for its regular quarterly meeting.

After a delicious dinner served at the hotel, the Society went into its scientific and business session. Dr. Waverly Payne, of Newport News, guest speaker, presented an interesting and instructive paper on "The Toxemias of Pregnancy" in which he emphasized the importance of consistent preventive prenatal care and the conservative treatment of all cases.

The Society endorsed the plan of Prenatal and Postnatal Instruction made possible by the Commonwealth Fund through the Medical Society of Virginia.

Delegate and alternate were appointed to the meeting of the Medical Society of Virginia in November.

Dr. H. L. Denoon, Nassawadox, is president of this Society, and Dr. W. Carey Henderson, Nassawadox, is secretary.

News Notes

Members of the State Society Invited to Richmond in September as Well as November.

The places for meetings of the State Society have been arranged. The two night convocations will take place in the Auditorium of the John Marshall Hotel, while the daytime sessions will be held at the new home of The Richmond Acadamy of Medicine, at 12th and Clay Streets, which will also house the offices of the Medical Society of Virginia.

Apropos of the above announcement, it will be of interest to members of the State Society, living outside of Richmond, to learn that the Academy's new building will be officially opened on Tuesday, September 20, 1932. At this time the Miller Library will be fittingly dedicated.

A buffet dinner will precede the dedicatory exercises. Dr. E. H. Cary, of Dallas, Texas, President of The American Medical Association, and Dr. Francis R. Packard, of Philadelphia, Editor of *The Annals of Medical History*, will officiate as guest speakers.

Members of the State Society are cordially invited to attend this function.

The Question Box.

In the letters sent all members, the last of June, with regard to the Richmond meeting of the Medical Society of Virginia, it was stated that, if sufficient interest is shown, we plan to have a "Question Box," the questions to be answered at a set time during our annual meeting. This is an innovation and we hope many members will avail themselves of its advantages. The gift of speaking and writing is not a common art, but we all wish information on some subject, from time to time. Several questions have already been received. Those sending the questions should arrange to attend the session at which it is announced the questions will be answered. Questions should be in the Secretary's hands by September 1st on a postal or in letter form and *they do not have to be signed* unless you so desire.

Married.

Dr. Roshier W. Miller and Mrs. Sallie Knight Hill, both of Richmond, Va., July 6th.

Dr. Hugh B. Brown, Jr., Draper, Va., and Miss Mary Jones, Bristol, Tenn., February 23rd. Dr. Brown graduated from the Medical College of Virginia in 1931 and has served the past year as interne at the George Ben Johnston Memorial Hospital in Abingdon, Va. He has located at Draper, Va., for the practice of general medicine.

Dr. Thomas Meredith Winn, Covington, and Miss Violet Gary, Kenbridge, June 30th.

Dr. J. Earle Wheeler, Belleville, Ill., and Miss Catherine Louise Davis, Beloit, Wis., June 18th. Dr. Wheeler is a graduate of the University of Virginia, Department of Medicine, in 1926.

Dr. Frederick Lionel Finch, and Miss Melba Mayhew Gravely, both of Richmond, Va., June 23rd. Dr. Finch is a graduate of the Medical College of Virginia, class of '32.

Dr. Jack Grizzard and Miss Ruth Corinne Cleek, Hot Springs, Va., June 22nd, in Richmond, Va. Dr. Grizzard is a graduate of the Medical College of Virginia in 1932 and is serving an internship at the N. C. Baptist Hospital, Winston-Salem, N. C.

Dr. Delbert T. Saffer, Aldie, Va., and Miss Martha Garnett Gresham, Newport News, Va., May 15th.

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News Notes from the Medical College of Virginia.

The Carnegie Corporation, New York City, has made a grant of $1,600.00 to be applied toward the development of the dental school library.

The second postgraduate clinic for Negro physicians was held June 20th-July 2nd. Eighteen physicians registered, twelve of whom attended the first clinic, and six were new matriculates. The course covered work in medicine, pediatrics, obstetrics, surgery and dermatology. Those who attended the clinic were quite enthusiastic about the work. Members of the faculty of the college conducted the clinic which was financed by the General Education Board of New York. Dean Numa P. G. Adams and Dr. H. A. Calis, both of Howard University, each gave a special lecture during the clinic course.

Dean Wortley F. Rudd of the school of pharmacy of the college spoke on Pharmaceutical Education at the joint meeting of the Virginia and West Virginia State Pharmaceutical Associations held at White Sulphur Springs, W. Va., June 20th-22nd. This was the first joint meeting of the two associations and celebrated the Silver Anniversary of the West Virginia Association. Dr. W. G. Crockett of the school of pharmacy had charge of the section on commercial interests. The next meeting of the two associations will be held at Old Point Comfort, Va.

During the meeting of the Virgina Academy of Science, held at Hollins College, April 21st and 22nd, the following papers were read by members of the college faculty:

The Treatment of Acute Arsenic Poisoning, W. R. Bond, Associate Professor of Physiology and Pharmacology.

Pharmacological and Toxicological Observations on Neonicotine, H. B. Haag, Associate Professor of Physiology and Pharmacology.

The Use of Nupercaine for Infiltration and Conduction Anesthesia in Exodontia, R. J. Main, Assistant Professor Pharmacology and Physiology, and V. R. Trapozzano, Assistant in Prosthetic Dentistry.

Actinomyces Necrophorus Infections in Man, Frederick W. Shaw, Professor of Bacteriology and Parasitology.

The Occurrence of a Calcerous Arterial Lesion in Goiter, Lewis C. Pusch, Associate Professor of Pathology.

Chemistry Related to Feeblemindedness and Epilepsy, Sidney S. Negus, Professor of Chemistry, and Beverley R. Tucker, Professor of Nervous and Mental Diseases.

An unprecedented increase in service by the out-patient department of the hospital division of the college is revealed by the statistics for the fiscal year which closed July 1, 1932. During the year 55,139 patient visits were made to the out-patient department, 13,016 more visits than last year, or an increase of 31 per cent. During the past six years the work of this department has increased 136 per cent. In the year just closed the clinic was open 303 days caring for an average of 181 patients a day. The largest number in any one day was 294 and the smallest number seventy-nine. Of the total patients handled last year less than one-half were able to pay anything toward the bare cost of the service rendered. There were 8,229 new patients who had not visited the clinic before.

News Notes from the Duke University School of Medicine and Duke Hospital.

On June 20th, the summer quarter of the medical school commenced with eighteen students registered in the second year class, twenty-five in the junior and twelve in the senior class. Fifteen students are taking work at other medical schools this quarter, for which they will be given credit here.

Seven of the eighteen students who graduated in June are serving interneships at the Duke Hospital, four are in hospitals in Baltimore, one in Atalanta, two in McKeesport, Pa., two in Worcester, Mass., one in Rochester, N. Y., and one at the Watts Hospital, Durham.

On June 10th, one hundred and fifty Duke Hospital nurses moved into the new nurses' home, which was recently completed and has accommodations for about two hundred.

Health Education Institute.

The first Institute on Health Education to be conducted by the Public Health Education Section of the American Public Health Association will be held at the Hotel Willard, Washington, D. C., October 22, 23 and 24, 1932, immediately preceding the Annual Meeting of

the Association, which opens Monday, October 24th.

The purpose of the Institute is to provide instruction in the content and methodology of Health Education to a limited number of persons actively engaged in Health Education. The students whom it is desired to attract to the Institute, may or may not have had training in Health Education in one or the other of the very few institutions where it is available. They may have had a little or considerable experience.

Additional information may be secured from the American Public Health Association, 450 Seventh Ave., New York.

American Public Health Association.

The sixty-first annual meeting of this Association will be held in Washington, D. C., October 24th-27th, with headquarters at the Willard Hotel. The American Social Hygiene Association, American Association of School Physicians, International Society of Medical Health Officers, Conference of State Laboratory Directors, Conference of State Sanitary Engineers, and the Association of Women in Public Health, will also hold their conferences in Washington at or about the same time.

Public health workers are urged to make their hotel reservations early so that they will be assured of adequate accommodations.

Dr. Roy K. Flannagan,

Assistant State Health Commissioner, returned on July 1st from a two weeks' cruise to Nassau in the Bahamas, Miami, Florida, and Havana, Cuba, and return over the same route. He was accompanied by Mrs. Flannagan, and they report the most enjoyable vacation of their experience. They sailed on June 18th from New York on the steamship *Munargo* of the Munson Line, and were back in New York on the morning of July 1st. Two or more days were spent at each point touched.

Nassau, the seat of the Government of this portion of the British Dominions, is located on New Providence, one of the smaller islands of the Bahama Archipelago. It has the most beautiful bathing beach to be found anywhere, and its wonderful sea-gardens viewed through a glass bottomed boat are worth taking the trip to see. Many would be interested in the signs found on almost every other store "licensed to sell wines and liquor." Nassau was formerly the headquarters of the notorious Blackbeard and other pirates of a hundred or more years ago. Now it is the headquarters, so it is said, of the Atlantic Coast bootlegging industry. The city has undoubtedly profited by the 18th Amendment. Dr. Flannagan reports that his style was somewhat cramped both at Nassau and Havana by his previous prohibition record. He was much impressed with the beauty of Havana from the sea and with its old world aspect on closer acquaintance. Old Spain was met with on every hand and something unfamiliar and interesting at every turn.

The contrast afforded by Miami, Florida to each of the two foreign ports visited he reports was most striking, and tended to stimulate a greater appreciation of the advantages of the United States as a place of residence. Dr. Flannagan's statement that he has experienced much hotter weather since he returned than at any time on his trip should encourage more Virginians to take this cruise, which is most reasonable in cost.

Dr. J. B. James Has Received Appointment to American Hospital of Paris.

The appointment of Dr. John Bruce James, of Danville, as interne at the American Hospital of Paris has been announced by the Medical Advisory Board of this hospital in America. The service begins April 1, 1933, and continues for one year.

Dr. James was graduated from the Medical College of Virginia with the class of 1931, and then served a year on the resident staff at Johnston-Willis Hospital.

The American Hospital of Paris is located in Neuilly-Sur-Seine, a suburb of Paris. It was founded by American residents and physicians to provide a suitable place for the treatment of Americans traveling or living abroad.

The main building which maintains 120 beds was officially opened in 1926 as a memorial to the men and women of the American Hospital who had rendered such excellent service during the war. This memorial building was erected and equipped at a cost of approximately $1,000,000.

Four internes are selected each year, all from this country, by the Medical Advisory Board of America, and it was through Dr. Beverley Randolph Tucker, a member of this Board that Dr. James' appointment was obtained.

After a period of three months devoted entirely to the American Hospital each interne

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is given the opportunity for work in the various Paris Hospitals and Clinics.

The Hospital is for the exclusive treatment of American patients, except in certain contingencies, but many donations are received from the French. The Medical Staff consists of both American and French physicians.

Nurses from any country are eligible for application and are chosen on their merit following examinations. A knowledge of the English language is required of all nurses.

Dr. James Asa Shield now practicing in Richmond and Dr. Giles Sydnor Terry now practicing in New York, and both Virginians, were former residents in the American Hospital of Paris.

Dr. James is interested in Neuropsychiatry and Endocrinology and will devote most of his time to these subjects while in Europe.

Dr. Edgar W. Young,

Petersburg, Va., has been awarded the Purple Heart Medal on account of wounds received in action, November, 1917.

New Pavilion at Pine Camp.

A new two-story pavilion at Pine Camp Sanatorium, Richmond, Va., has recently been completed. This building will house between seventy-five and eighty patients. The first floor contains screened-in porches, with radio head-phones at each bed, individual patient rooms, a diet kitchen, a helio-therapy room, dressing rooms and lavatories. On the second floor are the operating room, a dentist's office, fully equipped, nurses's chart rooms and bathrooms.

The funds provided for this work also allowed for a new administration building and for the remodeling of an old two-story residence which has been converted into a home for the nurses on the staff.

Joins Staff of Grace Hospital.

Dr. Eugene L. Kellum, formerly of the Mayo Clinic, has recently been added to the staff of Grace Hospital, Richmond. He will be in the Department of Internal Medicine. Dr. Kellum received his M. D. degree from the University of Pennsylvania and his M. S. degree in internal medicine after serving six and a half years at the Mayo Clinic.

West Virginia State Medical Association.

At the annual meeting of this Association in Parkersburg, in June, Dr. D. A. MacGregor, of Wheeling, was unanimously elected its president to succeed Dr. Albert H. Hoge, of Bluefield. The two vice-presidents for this year are Drs. James McClung, of Richwood, and T. L. Harris, of Parkersburg. Mr. Joe W. Savage, of Charleston is executive secretary. Charleston was selected for the place of meeting in 1933.

Dr. F. Waring Lewis,

Richmond. Va., announces the opening of his offices in the Professional Building. He will limit his practice to diseases of infants and children.

Dr. H. I. Amory

Has recently located at Phoebus, Va., where he will be engaged in general practice. He is a member of the class of '31 of the Medical College of Virginia and served his internship at St. Vincent's Hospital, Norfolk.

Dr. C. H. Armentrout,

Of the class of '31, Medical College of Virginia, has recently located at Flint Hill, Va., where he will be engaged in general practice. He has just completed an internship at Memorial Hospital, Richmond.

Hay Fever Clinic.

Due to the increased demand of people sensitive to hay fever pollens and allied diseases, the New York Polyclinic Medical School and Hospital has enlarged this department to meet their needs. Clinics are held every morning from nine-thirty to eleven o'clock.

Dr. P. W. Miles,

Danville Va., announces removal of his offices to 614 Holbrook Avenue, that city.

Dr. J. N. Higginbotham,

Tazewell, Va., is taking "the cure" at West Baden, Ind.

Dr. S. T. A. Kent,

Ingram, Va., was recently honored by the people among whom he has labored for a half a century, when several hundred people of that community gathered in the grove at the local church for a meeting held in his honor.

Dr. Hugh H. Trout,

Of Roanoke, Va., addressed the Danville-Pittsylvania Academy of Medicine at its May meeting on "The Surgery of Pulmonary Tuberculosis."

The Covington General Hospital

Has recently made a number of alterations, increasing its capacity by ten beds, providing new operating rooms and a roof garden. Dr. W. Preston Burton is physician in charge.

Major B. B. Warriner,

Of the U. S. Army, recently at Brooks Field, Texas, has been transferred to Randolph Field, Texas, in connection with the School of Aviation Medicine.

Dr. Harloe Bailey,

Of the class of '31, University of Virginia, has completed his internship at the Iowa Methodist Hospital, Des Moines, Iowa, and returned to his home at Saltville, Va.

Dr. Louis C. Brand,

Of the class of '23, University of Virginia, Department of Medicine, who has been on a year's furlough in Virginia, has returned to his work in connection with the American Southern Presbyterian Mission at Kwangju, Korea.

Dr. Edmund Horgan,

Washington, D. C., is attending the Centenary meeting of the British Medical Association, as a delegate from the American Medical Association. He expected to remain in Europe for several weeks following the meeting.

Dr. Calvin H. Cain

Has located at Orange, Va., where he will be engaged in general practice. He graduated from the Medical College of Virginia in 1930 and has been serving an internship at the Graduate Hospital of the University of Pennsylvania.

Dr. Wyatt E. Roye,

A graduate of the Medical College of Virginia in 1931, has located at 307 W. Brookland Park Boulevard, Richmond, for general practice. He served his internship at Grace Hospital.

Dr. E. Marvin Mann

Is practicing medicine with Dr. S. M. Mann, of Moyock, N. C. He is a graduate of the Medical College of Virginia, class of '31, and served internships at Grace Hospital, Richmond, and St. Vincent's Hospital, Norfolk.

Dr. J. G. Storie,

After having spent the past year in the mountains of western North Carolina, recuperating and doing some special study in diseases of children and preventive medicine, has returned to Grundy, Va., to resume his practice.

Dr. Antonio Gentile,

Will be located at Newport News, Va., after September 1st, as a member of the Staff of the Elizabeth Buxton Hospital, where he will practice surgery and gynecology. He has recently been located at University, Va.

Dr. Frederick Pilcher, Jr.,

Having recently completed an appointment at the University Hospital, has sailed for Vienna, where he will spend the remainder of the year studying. He is a member of the class of '29, University of Virginia, Department of Medicine.

Dr. Prosser Harrison Picot,

Of the class of '30, University of Virginia, Department of Medicine, is now located at the Women's Hospital in New York. He was the officiating physician at this hospital when the 20,000th baby was born recently.

Dr. O. K. Burnette

Announces the opening of his offices at the former location of Dr. J. W. Humphries in Culpeper, Va., where he will continue the practice of general medicine.

Dr. L. M. Hines,

Formerly of Drill, Va., has located at Abingdon, where he will be engaged in general practice.

Hourly Nursing Service.

The Private Duty Nurses' Club of Richmond, Va., announces the inauguration of an Hourly Nursing Service, in which its members are subject to call for service in all branches of the work that can be adequately performed in the home, at the following rates: $1.50 for the first hour or less, and 50 cents for each additional hour or fraction thereof.

The Club realizes that due to the present economic situation there is a pressing need for a service of this kind in Richmond, which has heretofore been furnished only by the I. V. N. A. The adoption of a similar movement will render a distinct service to the people who do not care for or cannot afford a full time nurse. It will also help to solve the unemployment situation among members of the Private Duty Nurses' Club.

For information, dial 3-1656. (*Adv.*)

An Ideal Place to Convalesce or Rest.

One block from ocean in pine grove. Special attention given to diets. Medical attention and professional nursing if required.

For particulars, apply to Mrs. Edwin M. Evans, Box No. 247, Virginia Beach, Va. (*Adv.*)

Obituary Record

Dr. Edmund Dozier Hunter,

Norfolk, Va., died June 30th, after an illness of some time. He was sixty years of age and graduated from the College of Physicians and Surgeons of Baltimore in 1901. Dr. Hunter was a native of Princess Anne County, Va., and had practiced in Norfolk for thirty years. He had been a member of the Medical Society of Virginia for twenty-eight years. His wife and a sister survive him.

Dr. Adrian Baldwin,

North Fork, Va., died November 1, 1931. He was seventy-seven years of age and graduated from the Louisville (Ky.) Medical College in 1896. Dr. Baldwin had been a member of the Medical Society of Virginia for twenty-eight years.

Resolutions on Death of Dr. Grandy.

Dr. Charles R. Grandy was born in Norfolk, April 9, 1871, the son of Cyrus Wiley Grandy and Mary Selden Grandy. His early education was obtained at the Norfolk Academy and the Bellevue High School. He entered the University of Virginia in 1889, where he distinguished himself as an exceptional student, graduating in 1892, with the degrees of Bachelor of Arts and Doctor of Medicine. After serving as interne in the City Hospital of New York, and the Hudson Street Hospital of that city, he continued his training in Europe, studying and working in the clinics of Freiburg, Frankfort and Berlin.

In 1898, Dr. Grandy began the practice of Medicine in Norfolk. He was the author of the first comprehensive public health law for Virginia, a measure that was adopted in 1899. Early in his career he became interested in the study of tuberculosis, and was a leader in the fight against this dread disease. In 1906 he organized the anti-tuberculosis clinic of this city, the first in the State, and remained at its head until his death. In recognition of this service, the city's tuberculosis sanitorium was last November dedicated in his honor, "The Charles R. Grandy Sanitorium."

Dr. Grandy served as president of the Norfolk County Medical Society from 1900 to 1901, and was president of the Medical Society of Virginia from 1930 to 1931. He was a member of the American Public Health Association, the American Child Health Association, the National Tuberculosis Association, a Fellow of the American College of Physicians, and a member of the Alpha Omega Alpha Medical fraternity.

NOW, WHEREAS, The Norfolk County Medical Society has learned with profound regret of the death of their beloved and esteemed past-president, Dr. Charles R. Grandy. Therefore, be it

RESOLVED, First: That in the death of Dr. Grandy the Norfolk County Medical Society has been deprived of one of its most valuable members, whose character was of the highest, whose kindliness knew no bounds, and whose unselfishness and lofty purpose set him as a man apart. In addition, he was a skilled and learned physician and gave his time, his means, and his skill liberally to the poor, unfortunate and ill ones of our community.

RESOLVED, Second: That a page in the minute books of this Society be set apart and dedicated to his memory;

RESOLVED, Third: That a copy of these resolutions, with an expression of our sincerest sympathy, be sent to his family, and a copy each to the local press and to the VIRGINIA MEDICAL MONTHLY.

A. BROWNLEY HODGES,
N. G. WILSON,
Committee.

Resolutions on Death of Dr. Sims.

At a called meeting of the Warwick County Medical Society, held June 22, 1932, the following resolutions were unanimously adopted:

Whereas, it has pleased the all-wise Creator to remove from our midst our comrade, Doctor Thomas Jackson Sims, who passed to his reward on June 9, 1932, after an illness of several weeks,

RESOLVED, That in the death of Dr. Sims the profession has lost a valuable member and the community an outstanding citizen. Dr. Sims upheld the best traditions of his profession; he took a keen interest in the welfare of his patients and at all times he gave to them his best service. He was a humanitarian, a Christian soldier, a most useful churchman, and was a stepping-stone for humanity to reach nobler heights.

RESOLVED, That these resolutions be spread on the minutes and a copy be sent to the bereaved family.

B. ROSCOE GARY,
W. F. COOPER,
W. S. SNEAD,
Committee.

Dr. Edwin Murray Mann,

Kenbridge, Va., died July 2nd. He was a native of Petersburg, Va., and sixty-four years of age. Dr. Mann graduated from the University of Virginia, Department of Medicine, in 1887. He was formerly head of an army hospital in San Carlos, Ariz., but had practiced in Lunenburg County, Va., for thirty years. His wife and three children survive him.

Dr. Anna Moon Randolph,

Hampton, Va., died April 8th. She was seventy-two years of age and a graduate of the Woman's Medical College of Pennsylvania in 1899.

Dr. William Jackson Smith,

Sperryville, Va., died May 1st of chronic myocarditis and nephritis. He was seventy years of age and graduated from the Jefferson Medical College, Philadelphia, in 1886.

Dr. Caesar S. Bassett,

Hampton, Va., died May 24th. of pulmonary embolism following an appendectomy. He was fifty-four years of age and graduated from the Leonard Medical School, Raleigh, N. C., in 1906.